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OUTLINE OF A PERSONALITY STUDY FOR OFFICE USE.*

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The idea of the personality as a whole is still somewhat vague when one considers its practical application. It is stated that the patient should be treated and not the disease. There are not diseases, there are only sick people. There is a person present as well as a diseased organ. The physician should know this person that he must treat, certainly as well as the symptom complex that he is treating, or as well as the life cycle of the organisms that are causing the disease. Not knowing the personality, how can he heal it or even recognize when it is whole?

Experience undoubtedly does bring the physician this ability in great measure. The greater this characteristic is possessed the greater the physician is said to be schooled in the art of medicine, that power, added to by years of observation, which allows him to sense the total situation. If there is any one quality which should distinguish the rural physician from the urban, it should be his grasp of the personality of his patient, as in the rural districts each individual is more distinct, his life story known, so that the physician has the opportunity to know the man before he sees him as a patient.

So much has been written on the personality of late that now bibliographies of bibliographies are published. The definition of this elusive entity differs with each individual writer, yet there seem to be at present two ideas emerging clearly. The first is that of some psychologists who use the term to denote the relation of an individual to the social group. Galliland[1] contrasts personality with, first, temperament, which is used to refer to the more stable, emotional tendencies of the individual; second, character, which implies more the moral phases of conduct; and, third, self, the whole individual. He divides self according to the usage of James into the material, the social, and the spiritual self, taking the social self as the same as personality.

The other conception is that of the psychiatrists who speak of the integrated personality. They have the idea that as the different physical parts of man have evolved his mind, his spirit, and his environment have evolved through many layers or integrations, if you will, so that now these parallel and interfluent evolutions have produced a unit, which, at each moment, is in a process of re-integration, but also at each moment lives and acts as a unit entirely dependent on its parts on the one hand, but on the other hand having characteristics not inherent in any part. The man in action, the man as he is in life, is the unit under discussion.

TABLE I

MAIN PERSONALITY TRAITS

(Amsden and Hoch)

I. Intelligence, Ability to Learn, Judgment.
II. Output of Energy.
III. Estimation of Self.
IV. Adaptability Toward the Environment.
V. The Mood.
VI. Instinctive Demands (Sex).
VII. General Interests.
VIII. Pathological Traits.

Amsden and Hoch,[2] in their guide to the descriptive study of the personality, divide the traits to be considered into eight groups: (1) Intelligence. (2) Output of energy. (3) Estimation of self. (4) Adaptability toward the environment. (5) The mood. (6) Instinctive demands (sex). (7) General interests. (8) Pathological traits.

TABLE II

PERSONALITY TRAITS

(Terman)

I.	Intelligence	
II.	Will Temperament	
	Energetic	Weak
	Prompt	Slow
	Persistent	Vacillating
	Careful	Reckless
	With ease	With difficulty

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III. Emotional Temperament
  Optimist
  Pessimist
  Elated-depressed
IV. Moral Attitude or Judgment
  Trustworthy
  Not trustworthy
V. Asthetic Sensibility

The psychologists, however, in their testing divide the different traits as follows: (1) Intelligence. (2) Will temperament. (3) Emotional temperament. (4) Moral attitude or judgment. (5) Asthetic sensibility.

TABLE III

I. Extrovert—	
A. Interested in action	
B. Interested in social affairs	
C. Interested in general principles	ROBUST?
D. Is race conscious.	
II. Introvert—	
A. Interested in self	
B. Interested in loves details	
C. Is sensitive	ASTHENIC?
D. Is retiring	

Still further from the psychiatrist, two types, the extrovert and introvert, arise. The former is interested in action, in objects, in people, in general principles, not details, while the latter is more a thinker, more retiring, more sensitive, interested in himself, and in facts, no matter how gruesome. It is intimated that the personality in which the main interest is outward is more often found in bodies of the short, thick type, while the introspective individual is found in the tall, thin, asthenic body structure. The psychiatrists, moreover, describe certain abnormal types according to the manner in which they react to their environment: (1) The dreamer, who uses phantasy to satisfy when reality fails; (2) The neurotic, who has been unable to civilize the instinctive trends and is seeking some alibi which will bring satisfaction; (3) The manic, who flies into reality to escape the conflict of the moment; (4) The depressive, who seeks death as an escape; (5) The antisocial or unmoral type; (6) The paranoid or suspicious type, who evades issues by blaming all conflicts on external sources.

Adler[3] emphasizes the value of self-estimation when he explains inferiority feelings as well as the over reaction that causes an apparent state of superiority. There are many more aspects of this situation, and it is undoubtedly true to understand a personality a complete analysis is necessary, yet such an effort is impossible except in the select few. What the doctor needs, however, is a working picture and not a detailed analysis. He has to trust to his impressions at first, then the biography or history that the patient gives, and, finally, his observations of the patient's behavior to enable him to make the correct approach, to protect the personality during the illness, and, finally, to resynthesize at the end. In such an incomplete way, of course, there can be no exact conclusion, but it is certainly possible to organize a great deal of data by a little orderly thinking. He can estimate all the traits mentioned above which are essential to him.

The doctor is interested in the intelligence, in the mood, in the energy output, and whether it is directed toward or away from self. Next, is the patient balanced emotionally? What is the character which depends on degrees of courage, resolution, and perseverence? What is the estimation of self? Are there feelings of inferiority? What is the reaction to the environment? Does the patient face his difficulties, is he side-stepping a conflict by blaming some person, some object or perhaps some pain or disease, or is he escaping by means of imagination and dreams? Finally, is there a flight which in the feebleminded becomes a panic, in the moody person mania or depression but in the queer and over conscientious individual a division or perhaps a complete dilapidation of the personality unit? These traits are the essential ones in all personality studies and they are what the doctor senses, but does not always label as such.

Intelligence need not be accurately gauged, but it is very necessary to know whether the person is a moron or feebleminded. The face or the expression may or may not indicate the intelligence. More often it does not. Calculations are often unfair. It can be found, however, first, if the patient's education is compatible with his opportunities; second, if he is skilful with his hands, and, third, if other people seek his advice. The ability to learn, the manual intelligence and the judgment are thus touched. The mood is expressed in the voice, the manner and the face. "Do you get tired?", brings out the manic, who never gets tired, and the mild depression which often is disguised as a neurasthenic. "Do you cry?" "Do you have blue spells?" "Are these periodic?" These are questions which are next employed. The mood is sufficiently obvious to need very little exploiting. Energy as used means interest and is something kin to vitality.

In this respect, the patient's manner, the speed and force of the speech and the general expression suggest immediately the amount of energy output. Of course, in a very sick patient the usual force is changed, but if the output before illness can be determined it may give some index to the resistance to disease one may expect and how likely the personality can be mended. The direction of energy is estimated also by the manner and to a very limited degree by the structural type. If the person is introverted he must be handled slowly and with care. The fundamental complaint will not be obtained until there is much probing. On the other hand, the extrovert has a tale to tell, and usually a diagnosis made, so it is best to let him talk it out to obtain cooperation with the necessary investigations to come later.

Instability of the emotions is most marked in abnormal personalities, especially the neurosis, yet in the normal there are those who constantly put too much emotion into everything they do. These people call for a guarded interpretation of symptoms. There is the worrier and the anxious patient—both based on poor habits of thinking. The recognition of emotional stability is part of the first impression but it is also developed through observation. Glandular dystrophies and organic handicaps, such as chronic disease, play their role here. The sentiments, the exaggerated type of speech, and the repetition of stereotyped phrases suggest an insufficient emotional control. The moral side of character interests the physician very little, but he is interested in the degree of courage, resolution and persistence. Character means conduct in conflict; disease also connotes strife. The strong character may be immoral, but self-control in the combat with disease means much. "Is he courageous or cowardly?" "Is he imitative, easily led?" "Does he give himself into the hands of the doctor and follow orders?"

The conceited person is likely to be suspicious. He also tends to blame others for his troubles; he very often makes a treacherous patient, not playing fair, often directing his own case. Inferior feelings, in some instances, are buried underneath causing sensitiveness, and calling for special attention. Again, this characteristic comes out in the manner, the facial expression and the conduct of the patient. Also the history of too much mothering and of late weaning make one suspicious of its presence. The absence of play in childhood and the antagonism toward the parent of the other sex help in this maladjustment.

All the personality traits so far considered could be thought of as environmental reactions. They, however, depend on the past, while the physician's chief concern is the reaction to the present difficulty. As indicated above, the personality has three methods of handling problems: One, by meeting the situation squarely; the second, by attempting to side step or compromise; and the third, flight. The first is the correct method. The second is sometimes very efficient but most often failing. The sidestepping is often done by fixing the cause for failure on some outside object, a phenomenon that explains some disorders when a pain or a paralysis is used to escape inner conflicts. For example, it is very important in treating the neuroses, when they make every effort to use a physical alibi, or some mysterious phantasy such as nerves, to explain the exact cause of the situation, thus forcing them to face it squarely. The last form of reaction, flight, is usually disastrous. It may be a panic, as seen in the feebleminded, and in the blustering individual, at heart a coward; or, when more serious, involving the whole personality, it may become some form of mental disease.

TABLE IV

OUTLINE FOR PERSONALITY STUDY

I. Intelligence (Impression of very little aid)
   - A. Is education compatible with opportunities?
   - B. Is he skilful with his hands?
   - C. Do other people seek his advice?

II. Mood (Impression practically diagnostic)
   - A. "Do you get tired?"
     1. Manic never
     2. Neurasthenic always
   - B. "Do you cry?" "Do you have blue spells?" "Are they periodic?"

III. Energy Output (Manner and speech best indicators)
   - A. What is the amount? Is he—
     1. Vivacious?
     2. Apathetic?
   - B. What is the direction? Does his interest turn—
     1. Outside (Extrovert)?
     2. Inside (Introvert)?

IV. Emotional Control (Behavior—Speech)
   - A. Is there exaggeration, so-called "high strung" person?
   - B. Is there wasting due to poor habits of thinking—(Worries)?
   - C. Is there a pathological personality reaction?
     1. Neurosis (Civilized with difficulty)
     2. Glandular dyscrasias.

XUM

V. Character (Appearance and cooperation)
   A. Is he courageous?
   B. Is he imitative, easily led?
   C. Does he turn his case over to the physician?
VI. Estimation of Self (Appearance—Development)
   A. Is there conceit with suspiciousness?
   B. Is there hidden inferiority with sensitiveness?
   C. Is this due to warped development?
VII. Reaction to Environment (Impression and Observation)
   A. Is he facing life?
   B. Is he side-stepping by—
      1. Blaming some person or object?
      2. Using imagination or deams?
   C. Is there flight which becomes—
      1. A panic (Feebleminded)
      2. A mental disease in—
         a. moody people?
         b. in the over conscientious?

Thus, by organizing our impression and bringing out a few facts of behavior, an estimation of the total person can be made, as well as the personality reaction to the disease itself. As the observation continues through the course of illness these traits can be more correctly judged, and advantage taken of this knowledge to strengthen weak characteristics. Convalescence, however, is the doctor's great opportunity; frequently people are discharged healed in body but doomed to chronic invalidism because of personality damage. Yet, if the physician understands that the success or failure of any therapy in the last analysis depends on the reaction of the total personality, he will seize this time to reintegrate the whole. This is done, first, by seeing that the patient has a complete understanding of the situation and is not left any excusing mystery; second, by forcing him to face the facts as they are as nearly as possible; and, last, when the situation is impossible, when some function is damaged beyond repair, by teaching him to climb above the impossible, to sublimate, as it were, by using some mental stimulus as a substitute. Certainly it is the duty of every physician to estimate the total person at first, to guard it through the disease, and reorganize it so that the person will be able at the end to meet life at least as successfully as before the illness, even if the opportunity is not seized to improve the personality reaction and to bring greater success through a broader vision.

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DISCUSSION

DR. BEVERLEY R. TUCKER, *Richmond:* Gentlemen, I think this is a very important paper. The difficulty is to apply it. If we see patients with the disease only in mind, or the complaint only in mind, we shall often fool ourselves. I was with a pathologist the other day when someone was talking about a man who had a bad infection. There was a great deal of sympathy expressed for the man. This pathologist said: "Did you ever think about the bacterium, about how he is suffering? He was in his natural host; he was living in his regular environment, eating in it, just as we do, and doing very well, and then all these doctors came and put chemicals on him and cut him out and ruined his life." So, very often, we have a history of a case but we do not realize at all what the problems are, or what the environment is. We have to know our patient, know something of the heredity of the patient, know something of the environment of the patient. Much more than that, we have to know something of the ambitions and desires of the patient; we have to know something of the responsibilities of the patient and something of that patient's ego. How is he going to adjust himself to his illness?

As an illustration, we had a case sent us some years ago of post-puerperal psychosis. This woman came in, and we thought she was toxic and commenced to eliminate her until we nearly eliminated her physically; then we stopped. Then we thought that maybe this woman had something back of that and that it was not a toxic case. Investigation proved that she lived in the country and had no servants and had a husband and five children. It was after the birth of the fifth child that she became sick. She also had an aunt of her husband's, who was blind, living at the house; and her father, who was hemiplegic, also lived at the house. This woman did all the housework, all the washing, all the cooking, for the whole family. When the other child, an extra burden, came, she simply could not face the situation. When I found out these things, I sent for the husband. The husband promised me that he would send to some other relatives the blind lady and the hemiplegic and get adequate help in the house. This woman had for five weeks lain in bed; she had to be fed; she had not spoken a word; she lay in a position, with her hands crossed on her breast, that really simulated death. I told her that we had found out these things, and that these two old people would be sent away and her husband would get help for her and that her environment would be mitigated, and there was no reason why she should not get well. That afternoon she was sitting up in a chair, and three days later was walking all over the place. She went home. Three months after that she came to Richmond and came to see us, she was strong and healthy. Her husband had done what husbands do not always do—fulfilled his obligations.

I think this paper is very important.

PARTIAL RESECTION OF THE STOMACH FOR ULCER.*

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The ulcer to which reference is made in this paper is on the stomach side of the pyloric

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sphincter, of chronic duration, seriously crippling in its effects, dangerous to life, and has not been cured by medical and dietetic remedies.

The working diagnosis of gastric ulcer usually can be made by a combined clinical and X-ray examination. The differential diagnosis from cancer and from benign tumors is not always easy.

Reliable roentgenological examination requires much clinical and technical effort on the part of expert roentgenologists. It is not a job to be delegated to a technician.

The ultimate and exact differential diagnosis must be made by an expert pathologist from a study of the gross and microscopic specimens.

A stomach the seat of chronic indurated ulcer shows definite striking pathological lesions. There are areas of induration, often of large size, and usually surrounding adhesions resulting from penetration of the ulcer. On the inside of the stomach there are observed raw, bleeding areas with surrounding inflammation, areas of thickened mucous membrane, often in the form of polypoid growths, frequently stenosis of the pylorus, and other areas of deformity.

It is not believable that any treatment short of removal of the area involved could be expected to give relief from the symptoms arising from such stomachs. The dangers of resection of the stomach have caused surgeons to attempt to relieve the symptoms of the disease by such operations as gastro-enterostomy, excision of the ulcer, sleeve-resection of the area involved, and other operations too numerous to mention, which, by their very nature, could not by any theory be expected to cause beneficial changes in the pathological state of affairs, and which in practice have added complications to the original disease.

The operation of resection will always be one of some magnitude, and is not a job for amateurs. The trouble in the past has been, and doubtless in the future will be, that surgeons, lacking in ability to do a proper resection, have attempted to substitute some other operation which they may be able to do, and often make matters worse.

The resection can be done by trained surgeons with little risk to life upon patients who have not had the disease sufficiently long to develop serious local complications in the form of dense adhesions, or the advanced nutritional disturbances caused by secondary anemia and the prolonged starvation of indigestion.

In 75 per cent of the cases it is possible after excision of the involved area to anastomose the stomach end to end, or end to side, according to the method of Haberer or Finney, thus restoring the continuity of the stomach and bowel in the most nearly normal way. In a small proportion of cases where the stomach resection is to be made so high that it is impracticable to bring the ends together without tension, an end to side anastomosis of the stomach to the jejunum may have to be done.

Without going into details in describing the technic, which will be done in a later paper, the best exposure with the least retraction is obtained through a transverse incision; the duodenum is thoroughly mobilized to the left as far as the midline of the abdomen; exact haemostasis is obtained by individual ligation of blood vessels; the stomach and duodenum are cut at the selected points well above and below the area of disease without the use of

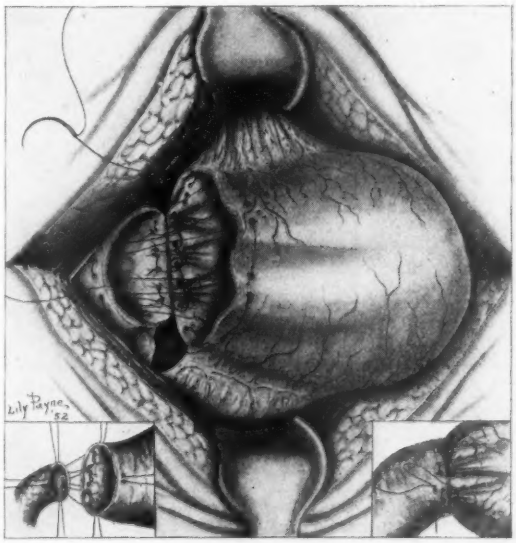

Fig. 1.—End to end anastomosis of the stomach to the duodenum. Note the larger amount of tissue included by the suture on the stomach than on the duodenum to make the ends fit. This can be done in three out of four cases.

clamps; and the reconstruction of stomach and bowel continuity established by end to end or end to side suture without the least tension at the site of union and with not a single suture made tight enough to cause necrosis.

In the summer and early autumn of 1931, we operated upon four patients in this way

for stomach ulcer, and have followed them closely now for more than a year, to determine the final results.

All the cases have had the usual clinical history of from three to twelve months' duration. In two, ulcerated carcinoma was strongly suspected from pre-operative study, and even after the stomach was exposed at operation. In one there was in addition to ulcer also a benign tumor of the hypertrophied mucous membrane prolapsing from the stomach into the duodenum. Three of the cases were of ulcer in a syphilitic stomach. (Dr. Pusch has made a detailed study of these cases, and will report them in his paper at this meeting of the Society). One was an ordinary peptic ulcer. One of the cases was a woman twenty-six years old; one a man twenty-three years old; one a man fifty-one years old; the fourth a man thirty-five years old. One case had had massive hemorrhage from the stomach; the other three had bled in smaller quantities over a long time. The hemoglobin in one case after a large hemorrhage was eighteen per cent, though it returned to nearly normal before operation. In the other cases, the hemoglobin varied from sixty-five per cent to eighty-five per cent at the time of operation.

The amount of stomach resected varied from three and one-fourth to four and one-half inches, measured on the lesser curvature. In three of the cases it was possible to reconstruct the continuity of the stomach and duodenum by end to end anastomosis without tension. In one, because of the great amount of stomach removed, it was not possible without tension to bring the ends together; consequently the open end of the stomach was sutured to the beginning of the jejunum through an opening in the meso-colon (Polya).

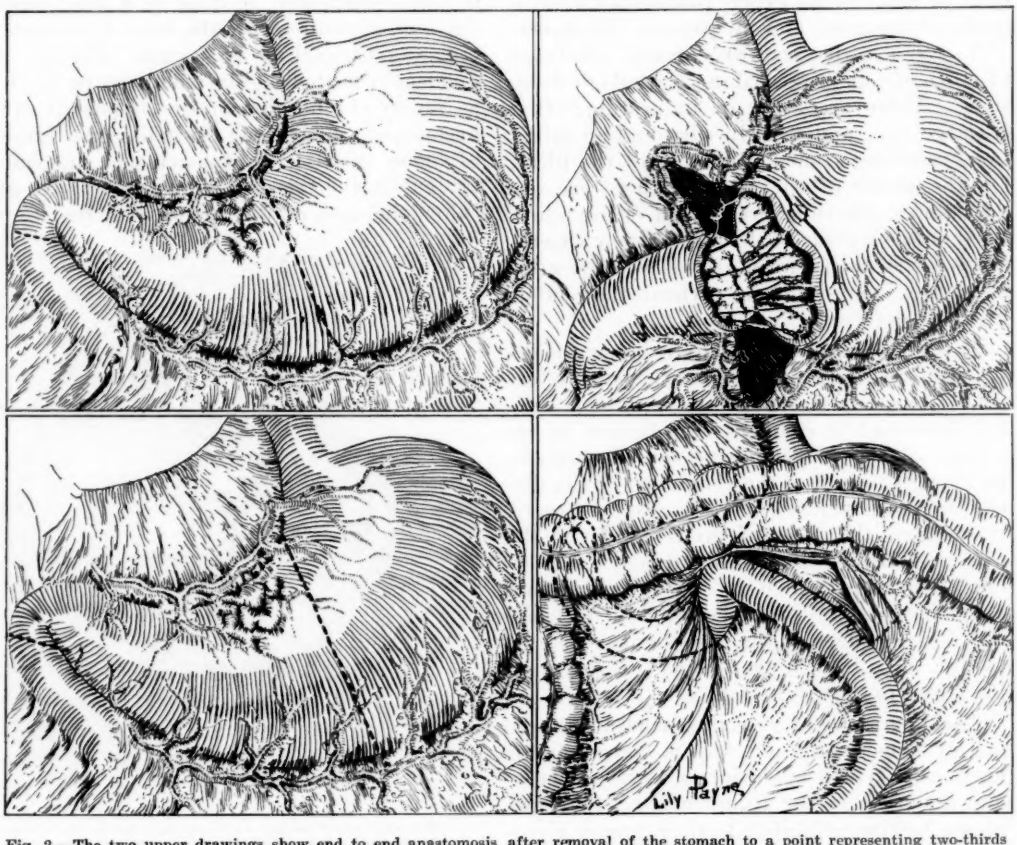

Fig. 2.—The two upper drawings show end to end anastomosis after removal of the stomach to a point representing two-thirds of the lesser curvature. The two lower pictures represent the end to side union of the stomach to the jejunum after removal of so much of the stomach that the end to end approximation could not be secured.

All four of these specimens were studied in great detail by Dr. Lewis C. Pusch. The ulcers were all chronic and indurated, varying in size from that of a nickel to a half-dollar. In one case there were two ulcers, separated by a polypoid mass of thickened mucosa which prolapsed into the duodenum. In all the cases there was considerable gastritis and areas of thickened mucosa and wall of the stomach. In one case there was gross penetration of the ulcer into the gastro-hepatic omentum. In three of the cases the stomach was the seat of syphilis. There was partial pyloric stenosis in all four cases, the stenosis being due to great pyloric thickening. Cancer was not present in any case.

All four cases had a normal convalescence without vomiting, and without complication. They were all out of bed from eight to ten days following operation. X-ray examination since operation in all cases have shown the stomach functioning well, and its anatomic relations quite normal.

All of the cases have been seen and questioned at frequent intervals over the year, and are totally without symptoms of stomach disease, eating normally of regular diet, and working hard. They have had no need of medical treatment.

DISCUSSION

DR. J. SHELTON HORSLEY, *Richmond:* Dr LaRoque's position in advis.ng partial gastrectomy for benign lesions of the stomach is undoubtedly sound. Many of these benign gastric lesions, whether ulcer or benign tumors, become cancerous later on. Miller, Eliason and Wright reported from their personal experience eight cases of benign tumors of the stomach, polyp-like in shape, in three of which there was malignancy at the base. In a large series of supposedly benign tumors of the stomach gathered from the literature they found about 35 per cent of all cases showed malignancy. A certain percentage of gastric peptic ulcers become cancerous. About nine years ago I operated upon a patient who had cancer of the stomach, doing a typical Billroth I partial gastrectomy, anastomosing the stump of the stomach to the stump of the duodenum. The patient developed obstruction. A gastro enterostomy was done, but as he was rather old and feeble he did not survive. Necropsy showed that the cause of the obstruction was swelling at the anastomosis of the stomach and duodenum, due to the turning in of a large amount of stomach and duodenum.

Following this case I modified the typical Billroth I in two respects. The lesser curvature of the stomach was aligned along with the upper border of the duodenum. Alvarez, Klein and others have shown that the tissue along the lesser curvature of the stomach initiates peristalsis and is important to preserve, whereas the greater curvature has no such function. It is important, then, to restore the proper relations of the lesser curvature to the upper border of the duodenum.

The other modification is as follows: After the stump of the stomach has been fixed in its relative position to the duodenum, the duodenum is flared open by an incision of about an inch or an inch and a half in its anterior surface. This makes a large exit for the gastric contents and renders it possible to turn in a considerable diaphragm without causing obstruction. Sometimes an end-to-end anastomosis can be made, after flaring open the duodenum in this manner, but, if not, the lower redundant portion of the stump of the stomach is folded in with a purse-string suture.

About two years ago I reported before the American Surgical Association partial gastrectomies that had been done for benign lesions for a ten-year period preceding July 1, 1929. I had done a total of twenty-two partial gastrectomies, according to the technic just described, without a death.

If so much of the stomach has to be removed as to make this technic impossible, a modification of the Billroth II method, such as the Hofmeister operation, seems to be indicated.

During the convalescence of partial gastrectomy cases it is important to give the stomach as much rest as possible, and at the same time to keep up the patient's water, calories and electrolytes. This is best done by the continuous intravenous administration of 5 per cent dextrose in Ringer's solution. An intravenous cannula devised by Dr. Guy W. Horsley and me is inserted into the vein and has the advantage of permitting either a large flow or a small flow. If a transfusion is necessary it can be done through this cannula which has its base ground to fit an ordinary Luer syringe, and the intravenous administration can then be continued.

DR. LAROQUE, closing the discussion: The main purpose of my paper was to condemn gastro-enterostomy for ulcer disease on the stomach side, because it adds another disease—gastro-enterostomy disease. Now, with good technic, the diseased area of stomach can be removed, and the patient is cured.

POST-OPERATIVE TETANY.*

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The subject of thyroid surgery has received great attention in literature in recent years. It is surprising, however, to find how scant is this literature concerning the complication of injuries to the parathyroid bodies during thyroid surgery. This phenomena may be explained by the relative infrequency of the occurrence of this complication. It would seem, however, that the severity of the symptoms manifested in some of these patients should serve to stimulate a material interest in the subject by men associated with thyroid surgery.

Parathyroid tetany may be, for convenience, grouped into three general classes, according to the severity of the symptoms. In the first group, we find the great preponderance of cases. The symptoms are relatively transitory in these patients. They ordinarily appear soon after operation with the patients complaining of stiffness of the muscles of their

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hands or feet, occasionally a little tingling in their hands and feet, and they have a tendency to have their hands and feet to feel as though they are asleep. This picture is not alarming and ordinarily clears up within twenty-four hours without any treatment whatsoever.

In the second group will be found the patients who have sustained apparently injuries to all the parathyroid bodies and they present an alarming and distressing syndrome. Soon after operation this group of patients develop spasms of the muscles of the extremities, of the neck, and frequently spasms of the muscles of the larynx. Some of these patients with violent manifestations of their disease are not relieved by any form of treatment, and death only relieves them of their unfortunate state. Fortunately, a relatively small percentage of parathyroid tetany falls in this group.

In the third group will be found patients who have gone through the initial acute parathyroid tetany, but whose symptoms do not clear up completely. They develop a constant calcium deficiency which is manifested by a blood calcium of ordinarily below 7 mgms. These patients require calcium therapy for a long period of time, and occasionally indefinitely. A small percentage of this group of patients seem to eventually acclimate themselves to a low calcium content and they may ultimately not require treatment. This group of patients present actually the chronic state of parathyroid deficiency.

With the development of thyroid surgery, there has been a gradual tendency on the part of surgeons for the past few years to remove more and more thyroid tissue; first, because it has been determined that a too limited operation frequently fails to accomplish a cure of the hyperthyroid state, and, second, in those cases where there is a superabundance of thyroid tissue left there is often a recurrence of the hyperthyroidism particularly in patients who have hyperplastic goiters. It has been said that those surgeons who practice more radical thyroid surgery may anticipate a greater number of injuries to the parathyroids. This assertion does not explain satisfactorily to me the operative complications, when one considers the embryological variation in the size, structure and location of the parathyroid bodies. It is felt that the parathyroids are rather constant as to numbers, but there is great variation in their location. From their point of origin from the third and fourth pharyngeal pouches they follow the cervical structures so that the pair arising from the fourth pouch will be found in direct relationship with the upper portion of the thyroid gland at the posterior or mesial aspect of the superior pole. The pair from the third pouch descend lower and are usually found on the posterior or lateral aspect of the inferior pole. The upper pair of glands may be ordinarily identified just under and to the inside of the superficial branch of the artery to the superior pole or between the pole and the trachea on the posterior surface. The lower pair are frequently found just under the middle vein, near the posterior surface of the gland. Because in the hyperplastic or exophthalmic goiters there is a symmetrical enlargement of the thyroid gland, there is little danger of injuring or removing the parathyroid bodies at operation. In the adenomatous goiters, which are irregularly enlarged and particularly that group which are substernal, the location of the parathyroid bodies varies very considerably, due to the distortion of the adjacent structures. The injuries which have been most frequently reported have occurred following the second operation for the recurrence of toxic symptoms, when the first operation has not resulted in a cure of the hyperthyroidism.

The appearance of the parathyroid bodies varies much in shape and in size. The ordinary description of a kidney-shaped glandular structure about as large as a small bean is somewhat misleading. Some of these little bodies are oval in shape and others are long and have the general appearance of a strand of fatty or fibrinous tissue, while others are buried in globules of areola tissue. It may be said, however, that, when the parathyroid structure is actually seen, it is grayish brown in appearance, it is separated by a stroma of loose areola tissue which has a separate blood supply from that of the thyroid structure.

In a personal communication from Dr. Richard B. Cattell, of the Lahey Clinic, in Boston, I am advised that they have been able to avoid parathyroid injuries in all but three cases out of the last 6,000 operations which have been done upon the thyroid gland at the Lahey Clinic. In each of these three injuries the complication has resulted from a secondary operation. In this clinic, in Boston, very constructive work has been done upon the mechanical avoidance of injuries to the parathyroids during thyroid surgery. Great em-

phasis has been put upon adequate operative exposure for the complete enucleation of thyroid tissue and proper observation of the related structures. They feel that it is of importance to attempt to identify the parathyroid bodies whenever possible and, when these bodies have been unavoidably removed or injured, they have been successfully transplanted into the belly of the sterno-mastoid muscle.

An interesting observation made by Dr. Cattell is that, in a minute study of 200 thyroid glands removed, he was able to ascertain in fourteen cases, or 7 per cent, there had been removed one or more parathyroid bodies. Many years ago Dr. Halstead proved experimentally that one parathyroid uninjured was sufficient to avoid parathyroid tetany.

There have been many conflicting ideas as to the actual cause of parathyroid tetany. It is generally felt now that the cases presenting transient symptoms are due to operative interference with the blood supply to the parathyroids or to over-manipulation of these structures and, possibly, to the accumulation of blood and serum in the operative wounds, along with, occasionally, the too tight application of a bandage to the neck. I assume that, some times when one or more parathyroid bodies are removed at operation, it requires some little time for the human physiology to acclimate itself to this new parathyroid deficiency.

The immediate treatment of parathyroid tetany frequently finds us inadequately prepared to take care of the emergency and, when the cases presenting violent symptoms do require treatment, immediate relief is required. Calcium lactate and calcium chloride, dosage 40 to 50 grains by mouth every four hours, ordinarily supply sufficient calcium to take care of that deficiency which results from parathyroid disturbance. Later the dosage may be diminished. In an emergency, when the tetanic seizures are violent and alarming, a solution of calcium chloride or calcium lactate given intravenously will relieve the muscular spasm. Viosterol and irradiated cholesterol have been employed in dosage of from three to six drops, twice daily, inasmuch as it is thought that they enable the body to utilize the calcium with greater efficiency. In our own case calcium chloride was given both by mouth and intravenously. For a few days parathormone was also given intramuscularly. It was found that, when parathormone was given, the dosage of calcium could be very much diminished. In many patients a high caloric diet with the use of certain foodstuffs, such as milk, which has a large amount of lactose, is of value.

It is, of course, very important that this state of calcium deficiency should not be allowed to remain present over a long period of time, since cataracts in the lenses are very prone to result from this deficiency. The only reliable barometer as to the calcium content in the blood is frequent estimations. So long as the calcium chloride is kept above 8 mgms., it is thought degenerative changes from calcium deficiency will not occur, and, of course, the tetanic seizures will not occur. When it is not possible to get the calcium estimates at frequent intervals, then repeated clinical tests, such as Chvostek and Trousseau's signs, may be relied upon.

Case 1. W. M. J., male, white, age 31, referred by Dr. J. V. Jordan, Covington, Va., on March 12, 1929. This man had typical clinical manifestations of a hyperplastic or exophthalmic goiter with a basal metabolic rate of plus 80. He was given iodine in the form of Lugol's solution, and a primary sub-total thyroidectomy was done upon him on March 25, 1929.

He remained perfectly well until the early part of July, 1931, when he returned to us with the same picture of hyperthyroidism. There could be felt at that time a little fullness in his neck, particularly over the region of the upper poles. He was again given iodine therapy and on August 7, 1931, we removed a considerable amount of thyroid tissue, which was found to be located near the upper poles, immediately against the posterior capsule which had been left intact at the primary operation. His operative recovery was again satisfactory, and he was discharged from the hospital on August 12, 1931.

The patient advised that on August 20, 1931, he began to feel a little numbness in his fingers and toes. On August 23, 1931, while he was driving his car, he suddenly developed tonic spasms of the muscles of both arms and a great retraction of the muscles of his neck. He was unable to swallow and his breathing was difficult. He was rushed to the hospital and we gave him 30 grs. of calcium lactate dissolved in 20 c.c. of distilled water. His muscular spasms began to subside before the intravenous therapy was even completed. Within five minutes after the intravenous calcium lactate was given he was completely relaxed, but greatly exhausted. About eighteen hours later he had a general recurrence of his muscular spasms and the same treatment was repeated. On August 25th, his blood calcium was 8.5 mgms. Calcium lactate was given by mouth three times daily and one dose of 30 grs. of calcium lactate was given, dissolved in 20 c.c. of distilled water each day intravenously. On the sixth day after his spasms began he was given an ampoule of parathormone subcutaneously. His calcium lactate was discontinued intravenously and the oral administration was reduced to 20 grs. three times a day. Weekly estimates of his blood calcium showed that he had a constant diminution of his calcium content, varying from 7.3 to 7.8 mgms. At the end of two months he was getting only one dose of calcium lactate, grs. 30 daily, and all other treatment was withdrawn, except that he was encouraged to drink

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large quantities of milk. At the end of a three months' period his calcium content was found to be 10.2 mgms. All his calcium therapy was withdrawn, and he was symptom free.

This patient was last seen on August 21, 1932, at which time he was relieved of his hyperthyroidism and of his parathyroid disturbance.

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Discussion

Dr. James H. Smith, *Richmond:* As Dr. Emmett has pointed out, the subject of tetany following surgery of the thyroid gland is important, not so much on account of its frequency as because of the urgent need to recognize it when it occurs and promptly to apply appropriate treatment. He himself has observed the incidence of only one case in some six or seven hundred operations on the gland, and he quotes an incidence of only three cases in some six thousand thyroid operations in a Boston clinic. I have been in rather close association for some years with thyroid surgery, and do not recall ever having seen the condition develop post-operatively. I think, therefore, that Dr. Emmett is quite correct in emphasizing the importance of the condition on the basis of the importance of treatment rather than of frequency.

I recall a case, very severe, of cachexia strumipriva, due to the fact that the condition of the patient on the operating table was so desperate that the situation did not permit the delicacy in technic which should have been observed. That girl, after operation, was quite dependent upon the administration of thyroid extract, but at no time did she show signs of tetany.

Rather than review or re-emphasize any of the points Dr. Emmett has so well made, I shall take the liberty very briefly to refer to tetany in connection with surgery on a different part of the anatomy. I refer to so-called gastric tetany, the tetany which occurs with pyloric stenosis or obstruction in the upper part of the intestinal tract. I think it is well to call attention to this type of tetany, because there is a difference not only in the etiology but also a difference in the treatment. When there is a case of pyloric stenosis, or obstruction high in the intestinal tract, with clinical tetany developing, we do not expect to find a decrease in blood calcium, as described by Dr. Emmett. There is an error in calcium metabolism, but rather than an error in the amount of the total calcium, there is an error in the ionized calcium, or in the proportion of diffusible to nondiffusible calcium. Now, that calcium error arises because there has developed an alkalosis, an increased content of calcium, sodium, and carbon dioxid—an alkalosis which, in turn, has developed as a sequel of decreased chlorid content of the blood. And that decreased chlorid content is usually due to the fact that the vomiting on the part of the patient has decreased the chlorid supply over a considerable period. Now, those things being true, the emphasis rather belongs on the need to replace the lost chlorids. There are perhaps three chief agents by which we attempt to do this—hydrochloric acid, sodium chlorid, and ammonium chlorid. If the condition of the patient's stomach will permit the administration of hydrochloric acid, that is an easy way to replace them; but so often the stomach will not tolerate the oral administration of any remedy. Under those conditions, the various routes by which sodium chlorid may be administered are too familiar to need mention. I have seen recommended the use of ammonium chlorid intravenously. Personally I have never undertaken it. It may be given by proctolysis. The references to its use call attention to the possibility of hemolysis.

Dr. Emmett, closing the discussion: Mr. Chairman, my reason for reading this paper and reporting this case was occasioned by the concern which I felt when I was brought face to face with a case of tetany following thyroid surgery. The picture is a truly alarming one, and, although its occurrence is rare, the unhappy state of such a patient created great concern in my mind.

The record of injuries to the parathyroid bodies during thyroid surgery is impressively scarce. Practically all the cases which have been reported have occurred in patients who have been operated upon for recurrent hyperplastic goiters. This phenomena is probably explained by the disturbed anatomical landmarks resulting from scar tissue. The constructive work which has been done at the Lahey Clinic upon the conservation of the parathyroid bodies during thyroid surgery is a matter of great interest. It is probable that, with a little more attention paid to the identification of these bodies, we might entirely eliminate injuries to the parathyroids as a complication of thyroid surgery.

PRIMARY TUBERCULOSIS OF THE TONSILS—THE REPORT OF A CASE, COMPLICATED BY EXTENSION TO THE PHARYNX AND SOFT PALATE.*

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Tuberculosis of the tonsils may be divided into two major groups: I. *Primary*, called exogenous by Grunwald, which may be considered as embracing all those cases presenting no demonstrable evidence of clinical tuberculosis elsewhere in the body. II. *Secondary*, endogenous tonsil tuberculosis includes those cases associated with clinical pulmonary tuberculosis. The former is purely an arbitrary classification, and ignores the possibility of hematogenous infections.

The secondary type has been known for a long time and is far more frequent than primary tonsillar tuberculosis. Tubercles may be found in the tonsils of nearly all patients with advanced pulmonary tuberculosis. The earliest reference to the primary type, with a well authenticated case, was presented by Orth,[1] in 1887. He found characteristic microscopic lesions in children dying from diphtheria, and having no other evidence of tuberculosis elsewhere in the body. Since this time, many ob-

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servations have been recorded and much data accumulated.[2]

Tuberculosis of the soft palate and pharynx might also be considered as *primary* when associated with the primary tonsil lesion, or when found in patients in whom no other active tuberculous lesions can be demonstrated. It is probable that all of these cases originate by extension from tonsil infection. The *secondary* type is only encountered in cases of terminal pulmonary tuberculosis. One per cent of hospital phthisis cases are complicated by lesions of the soft palate and pharynx.

Isambert,[3] Fairlee Clarke,[4] and Kessler, each reported a case of apparent primary tuberculosis of the palate and pharynx, and Kussner[5] collected four others. After rather careful survey of the literature available in the Surgeon General's Library, and that of the American College of Surgeons Package Library, I have been able to find only three other reports of the primary palatine and pharyngeal lesions,—one by Barbier,[6] and two by Kowler.[7] While the possibility of error in this survey is admitted, it seems justifiable to state that primary lesions in these structures are extremely rare.

Crowe[8] found primary tuberculosis of the tonsils and adenoids in 4.18 per cent of a series of 3,260 tonsillectomies and adenoidectomies. Forty-eight per cent of the cases showing enlargement of the cervical lymph nodes had tuberculosis of the tonsils.

These figures agree with other studies of large series of cases, such as those presented by Mullen,[9] Fischer,[10] Cornell,[11] Weller,[12] and others, in this country and Europe. These series are composed of about fifteen thousand cases, studied between 1923 and 1927, and no ulcerative lesions of the palate and pharynx were encountered.

Anatomy

Wood[15] has worked out the lymphatics of the pharynx and tonsils very carefully and his work is freely quoted here.

The *nasopharynx*, with its adenoid mass, is richly supplied with blood through the anastamosis of the Vidian and pterygopalatine arteries with the ascending pharyngeal; its veins emptying into the pterygoid plexus.

The nasopharyngeal vault is provided with a network of lymph vessels, which drain either into the posterior, deep cervical glands, or the retropharyngeal nodes, which lie on either side of the midline between the mucosa and the aponeurosis over the bodies of the second and third cervical vertebrae. Thus, the pharynx, Eustachian tube and middle ear are drained.

The *orapharynx* contains the palatine tonsils, which resemble ordinary lymph glands in that they are composed of lymphatic cells with follicles or germinal centers. They differ from lymph nodes, however, in having only efferent lymph channels and no medullary sinus. The crypts are formed embryologically by in-growths of stratified squamous epithelium, whose cores become desquamated, thus forming the lumen. There is no sub-epithelial layer lining the crypts, and they extend completely through the tonsil, ending blindly at the fibrous capsule. Any interference with the drainage of the crypts predisposes to tonsil infection.

The efferent tonsil lymphatics have been traced to a gland belonging to the deep cervical chain and lying just beneath the anterior border of the sterno-cleido-mastoid muscle where it is crossed by the anterior belly of the digastric. When enlarged, it presents at the angle of the mandible. This gland drains into a group of collecting nodes, forming a collar about the upper part of the neck. This group is made up of the occipital, post-auricular, parotid group, submaxillary group, submental and retro-pharyngeal nodes. These, in turn, drain into the anterior and posterior chain of glands, which are on both sides of the neck, along the anterior and posterior borders of the sternomastoid muscle. These chains meet at a common gland just below the mastoid tip, and extend downward as an inverted "V."[22] These lymphatics enter the veins by the thoracic duct on the left side and the ductus lymphaticus on the right.

Immunology

From the relative infrequency of primary tuberculosis of the tonsils, and the extreme rarity of such a lesion of the soft palate and pharynx, it seems feasible to assume that these structures are endowed with relatively great resistence to tuberculous infection. In view of Von Behring's[16] statement that 96 per cent of adults of thirty years of age have tuberculous lesions, it is surprising that these structures are so infrequently affected.

The intact stratified squamous epithelium of the tonsils, soft palate and pharynx, forms an efficient barrier to the tubercle bacillus. When injured by foreign bodies, such as toothbrush

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bristles, rough foods, operative procedures, ulcers, etc., the barrier becomes less efficient. Irritants, syphilis, inflammations, such as tonsillitis, thrush, pyorrhea, etc. predispose to infections.

The leukocytes so prevalent in these structures which are rich in lymphatics, destroy great numbers of bacteria. The saliva covers the bacillus, and, besides some inherent antiseptic properties, mechanically prevents intimate contact with the mucosa. The intruder is thus incorporated in the salivary stream and either swallowed or expectorated.

The number of tubercle bacilli to which one is exposed, their virulence, the general health and resistence of the host, are other factors in the battle against infection. Thus, persons living in homes with careless tubercular patients, about sanitaria, and workers in laboratories, should be more likely to come into intimate contact with the tubercle bacillus.

Pathology

It has been demonstrated that, by gently rubbing cultures of tubercle bacilli, or infected sputum, into the buccal mucosa of animals, care being taken not to abrade the surface, no lesion will occur. However, in these cases, involvement of the cervical nodes has been demonstrated. In case the surface of the mucous membrane is broken, ulceration will occur with concurrent cervical adenitis.[17] It has been definitely established that tubercle bacilli may penetrate the tonsil mucosa without leaving any gross or microscopic evidence locally; then may lodge in the adjacent cervical lymph nodes and there cause tuberculous adenitis, or lie dormant and later may cause infection, locally, or in the blood stream.[22]

The mouth and nose are the first stadia of all tuberculous infections, and, therefore, the portal of entry for all cases except those rare traumatic ones. The two major modes of infection are: I. Inhalation of dust, particularly house dust infected by sputum. II. Ingestion probably plays the major role in infection of the tonsil with the tubercle bacillus. Infected foods, fingers, toys, carry great numbers of bacilli into the mouths of children, who spend most of their early years playing on floors, which might readily be infected by shoes, sneezing, coughing, etc. Infected cows play a great part in the etiology of tonsil tuberculosis, as evidenced by the fact that in Edinburgh, where milk was not pasteurized, 38 per cent of the tonsils removed showed evidences of tuberculous infections, and 20 per cent of the source of milk supply contained tubercle bacilli.[18]

The typical tubercle is a nonvascular structure, which receives its nourishment from surrounding tissues. It consists of a central area of necrosis, surrounded by massed lymphocytes. There are numerous giant or epithelioid cells, and the necrotic center is made up of lymphocytes, tubercle bacilli, and debris, in varying stages of necrosis.

In tuberculosis of the tonsils, three types of infection have been recorded, and it is striking that nearly all apparently begin at the upper pole. I. Crypt infections, starting beneath the mucosa, near the bottom of the crypt. II. Tuberculous ulcerations, or the lupoid form, first attacks the submucosa, with the formation of tubercles. The overlying structures slough, due to interference with nutrition, leaving dirty ulcers with undermined and irregular edges. This picture also represents the process which takes place in the pharynx and soft palate, and is practically always found in terminal tuberculosis. The palatine and pharyngeal lesions are probably always secondary to tonsil tuberculosis, but the ulcers are not necessarily extensions from ulcers of the tonsils. They seem to be due to new areas of necrosis over the tubercles in these structures. III. Multiple intrafollicular infections due to blood stream infection (miliary).

Park and Krumwiede[19] have shown that 61 per cent of tuberculous adenitis cases in children of under five years of age are the results of infection with the bovine type of bacillus.

At this point, I wish to call attention to the gland that is situated just beneath the aponeurosis of the lateral pharyngeal muscles, at the extreme apex of the tonsil fossa. In cases where the tonsil infection is very pronounced, this node is frequently so large as to present into the apex of the tonsil fossa, just beneath the anterior pillar. It is very difficult to always determine how much of this tissue should be removed, and frequently its efferent vessels can be traced deeply into lateral pharyngeal muscles.

Retropharyngeal abscesses of tubercular origin are very infrequent, but, when they occur, are usually the result of caseation and breaking down of the retropharyngeal nodes.

Symptoms and Signs

There is nothing characteristic in the symptoms or signs presented by tuberculosis of the tonsils. Usually the diagnosis is made only after sections have been made of the removed tonsils. The most pronounced symptom is dysphagia, which is frequently so marked as to cause great cachexia from the inability to swallow food. The neck is stiff and sore, due to the adenitis, and there is marked malaise, anorexia, and prostration. It is not unusual to note an afternoon temperature of from 99 to 100 degrees.

The signs are those of any acute exacerbation of a chronic throat infection. The tonsils are hypertrophied, and bands of fibrous tissue, which run irregularly over the tonsil, may be noted. The crypts may or may not be closed, and, on expression, pus or straw colored fluid may be discharged. Usually ulceration cannot be noted, or, at least, is overlooked. The tonsil is fibrous and hard to the feel by instrumentation, and, on gagging, shows deep embedding. The glands of the neck are tender, vary in size, and may be discreet or coalescent.

The pillars are usually congested and adhesions to tonsils may occur. The pharynx usually shows a marked granular pharyngitis. The symptoms may entirely subside between acute attacks, and present only hypertrophied tonsils, granular pharyngitis and cervical adenitis.

Diagnosis

Unless ulcerations are seen, which is rare, there is nothing in the gross appearance to differentiate tuberculous from other tonsil infections. It occurs most frequently in children, especially of the negro race, without preference being shown to either sex.

Usually the diagnosis is made by the microscopical study of tissue sections, in which typical tubercles are found in the tonsil tissue. The danger of confusing pseudo-tubercles, resulting from foreign bodies, seems to be very small, for the foreign body, or the vacuole left as the result of its being dissolved by fixing fluids, can be demonstrated.[21]

Animal inoculation is a reliable diagnostic aid, but mixed infections frequently kill the guinea pig quickly, thus obscuring the tuberculous lesions.

The tuberculin test, when positive, presenting local, focal, and general reactions, is pathognomonic, but with only local and general reactions is of little value.

The pharyngeal and palatine ulcers, especially when the latter is associated with perforation, must, by biopsy demonstration of tubercle bacilli, or spirochete in scrapings, and serology, be distinguished from syphilis. In these cases, the symptom of extreme dysphagia is out of all proportion to the tonsil appearance.

Prognosis

There seems to be no cause for alarm in cases in which tubercles are found in the tonsils, as healing usually differs in no way from that of removal of the ordinarily infected tonsils. Tonsillectomy usually relieves the cervical adenitis, as shown by Fischer's series, in which there were 57 per cent cures after five years. These cases should be watched for a long time, however, as tuberculosis in other parts of the body frequently occurs. Though rare, the possibility of extension of ulcerative processes to the palate and pharynx should be borne in mind.

In cases of pulmonary tuberculosis, complicated by pharyngeal and palatine ulcers, the prognosis is not good. In the primary type of ulcerations the prognosis should be very guarded.

Treatment

Removal of the tonsils is indicated, and these cases should be encouraged to eat and drink a diet of high caloric content, even if the pain in swallowing is great. They should be kept in bed longer than usually required, and every effort to keep up their weight should be resorted to. Tonics and blood stimulating drugs, such as sodium cacodylate and iron should be given early in those cases presenting marked secondary anemia. They should be encouraged to get sufficient rest, and should be observed over a long period of time, after operation.

When healing is sluggish and ulcerations are present, tube feeding may combat the cachexia due to dysphagia. Cod liver oil and heliotherapy are also of value in these cases, but when ulceration of the palate and pharynx occurs, the spreading of ulcers is controlled only by electro-coagulation or the actual cautery. Tuberculin therapy, X-ray and heliotherapy are of questionable value in treating the ulcers, but should be tried.

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Case Report

N. B., an unmarried female, 19 years of age, whose occupation is housework, consulted me on May 11, 1928.

Complaint: "Sore throat."

Family History: Unimportant, with no history of tuberculosis.

Past History: Past general health good, except for sore throat. Usual childhood infections, with uneventful recoveries.

Eyes: Negative, except for strain after close work.

Nose and Ears: Negative.

Throat: Has had sore throats and tonsillitis frequently since early childhood. Attacks occurred frequently, and were attended by fever, malaise and occasional chills. The patient felt well between attacks, although one would frequently follow on the heels of another. She has always been susceptible to colds, which usually precede and aggravate the sore throat, but has never had quinsy. While there has been no aphonia, she has always had a hoarse voice.

Glands: Enlargement of cervical glands has always been present, but these become very tender and swollen, causing "stiff neck" during attacks of tonsillitis. These glands never ruptured nor were they ever drained surgically; between attacks they subside and soreness disappears. The thyroid has been enlarged since four or five years of age, and at times causes pressure symptoms, which are worse about menstrual time.

Heart: Negative, except for occasional palpitation.

Lungs: No cough or expectoration except with colds. No hemoptysis, night sweats, or pains in chest. There have been no periods of marked loss of weight, and lassitude is present only during attacks of tonsillitis. Greatest weight 160 pounds, but usually weighs 140.

Gastro-Intestinal: Negative.

Genito-Urinary: Negative. Patient denies rash or genital sore, but admits exposure. Menstrual history unimportant.

Extremities: Has had sore, stiff joints, but no acute rheumatism. Muscles and joints ache during attacks of sore throat.

Present Illness: For several weeks patient has had sore throat, and this attack differs in no way from those of early childhood. Her tonsils are swollen, and swallowing is very painful, so that only liquids have been taken for several days. This symptom, of marked dysphagia, drove patient to seek aid. Her throat has had no spots or ulcers on it, but she thinks she has had some fever. There has been much aching of the joints and general malaise, and most of the past week has been spent in bed. The glands of her neck are very tender and sore, and turning the head causes pain. Patient has not had a chill, night sweat, cough or expectoration, and while there has been no aphonia, her voice has been hoarser than usual. She feels generally miserable, and all physical exertion is an effort.

Physical Examination: (Only the positive findings will be noted here, except in the case of the throat and lungs.)

Patient is a well developed young white girl, without evidence of deformity or muscle atrophy.

Head, Eyes, Ears: Negative.

Nose: Moderate turgescence.

Sinuses: Illuminate normally and X-ray negative.

Teeth and Gums: Negative.

Throat: Pillars congested, and pharynx inflamed, having many red and swollen plaques of lymphoid tissue, particularly just behind the posterior pillars and running into nasopharynx. There is no discharge in pharynx or nasopharynx. Both tonsils are about 3x3 cm. and extend well towards the midline of the orapharynx. They are hypertrophied and present wide, fibrous bands, running irregularly on their surfaces. The crypts are numerous, but there are no spots or membranes present. On expression, each tonsil feels firm and fibrous, and some dirty, straw colored fluid exudes from crypts. On gagging, the base shows itself deeply embedded in pharyngeal wall. There is very little pus or concretions, and, on the whole, the picture does not seem compatible with the great dysphagia complained of.

Cervical Glands: The anterior and posterior chains are enlarged and the tonsil gland is about 1 cm. in diameter. These nodes throughout are tender, and vary in size and shape. Some are firm and others doughy, and while there is some matting together, they are mostly discreet. No fluctuation is present. The right lobe of the thyroid is about 8 cm. in diameter, freely movable and smooth.

Heart: Pulse 64 per minute, and otherwise

negative except for accentuation of pulmonic second.

Lungs: Respiration 16 per minute, and temperature 99.2 degrees. Examinations, both physical and X-ray, were made by Dr. Frank Stafford, of the Blue Ridge Sanatorium, at Charlottesville, Va., on August 3, 1928, and November 13, 1929. Stereoscopic X-ray plates were again taken September 11, 1930, and examined. The physical examination was entirely negative. The conclusions, drawn from the X-ray plates were: "There are some abnormal findings in both hila regions and the apical trunks are too heavy to be normal. These, however, do not justify a diagnosis of clinical tuberculosis from an X-ray standpoint."

Abdomen: Negative.

Reflexes: Normal.

Notes

For a period of about six weeks, this patient was treated at frequent intervals by sprays, gargles, and local applications. Finally, the inflammation subsided, swallowing became comfortable, and, after the report of a negative blood Kahn test two days beforehand, the tonsils and adenoids were removed. The operation was performed by dissection, under ether anesthesia, on June 22, 1928.

The capsule separated readily, except at upper pole of each tonsil, where no capsule could be demonstrated. At this point the tonsil tissue seemed to extend into the pharyngeal wall, as evidenced by a lymphoid projection at the extreme apex of the tonsil fossa, just beneath the anterior pillar. As much of this tissue was removed as was deemed advisable, but even then it seemed questionable that the tonsils were cleanly removed. The bleeding was profuse from both fossae, and was controlled only after many sutures were applied. In fact, the points of insertion of the needle would bleed freely, and it was necessary to almost entirely sew up the fossae. The actual operating time was one hour, and the patient reacted poorly to the anesthetic. She became cyanotic, ceased to breathe, and the pulse became too thready to count. Treatment for shock soon corrected this.

The patient remained in the hospital only two days, and during this time the highest temperature was 101 degrees, which was shortly after the operation. It was 99 degrees on departing in the afternoon. The throat was badly swollen, and there was marked ecchymosis, extending over soft palate. Due to soreness of her throat, the patient refused nearly all nourishment.

Due to appearances of the tonsils, and the profuse hemorrhage, sections were made from them for microscopic study, and the following report was received from the Department of Pathology, of the University of Virginia: "Sections show chronic tuberculous inflammation, with hypertrophy. There are many tubercles, some of which show typical giant cells. Diagnosis: Tuberculosis of lymphoid tissue."

About fifteen pounds of weight were lost and much of this was due to inability to force nourishment by mouth. Otherwise, convalescence seemed to progress favorably, except that healing seemed slower than usual. The throat was treated regularly for about sixteen days, and then nothing was seen of the patient for two weeks.

Five weeks after operation, she consulted me because of continued and increasing sore throat. She presented a picture of cachexia and prostration. There was granulation tissue in the fossae, and this and part of pharynx was covered with a dirty, ropy exudate. Just behind the posterior pillars, on both sides of the pharynx, an irregularly shaped, dirty yellow patch was seen (July 9th to July 23rd). When this exudate was removed, it left unhealthy, pale, worm eaten, ulcers, about 1 cm. long. Their borders were undermined, irregular, and their centers were covered with yellowish, watery granulation. Two days later three similar patches were seen on the solt palate, just to the left of the midline, and about 1½ cm. from the junction of the anterior and posterior pillars. These coalesced and produced a perforation of the palate, about 1 cm. in diameter.

In spite of another negative Kahn test, .6 mg. of neosalvarsan (July 27th) was given—after taking blood for a Wassermann test. This blood was reported negative, and no effect at all was noted from this therapeutic measure.

The ulcers continued to spread by contiguity, and by outcrops in new portion of the pharynx and palate, with apparently healthy tissue between. The anterior and posterior pillars, as well as the pharyngeal wall and palate on both sides, had many ulcerated areas, varying in size. The larger ones were formed from the

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coalescence of several smaller ulcers. Their margins were irregular and undermined, and they were covered with exudate. There was little evidence of healthy granulation. The margin of the perforation in the palate was ulcerated and continued to encroach on surrounding tissue, until it was about 2 cm. in diameter. The nasopharynx was exposed to view, and presented a picture of dirty exudate, covering the inflamed vault. While there were no discreet ulcers in the nasopharynx, those of the orapharynx extended well up into it on either side. Phonation and deglutition were greatly interfered with by the perforation, and dysphagia was extreme.

The sputum had been examined at intervals on four occasions and was reported negative for tubercle bacilli. Seven weeks after the operation (August 13, 1928), a series of twenty-one therapeutic doses of "old tuberculin" were given over a period of two months. The doses ranged from .00001 mg. to 5 mg., and presented several local reactions. There was no improvement noted from this or other therapeutic agents, such as iodides, mercury, neosalvarsan, and local applications. Constitutional treatment, including rest, forced feeding, Alpine lamp, and improvement of living conditions were used, but the actual cautery seemed the only measure capable of arresting the rapidly necrosing process.

Two months after the operation, another blood Wassermann test was reported negative.

Throughout this course there was no evidence of any involvement of the larynx. The pharyngeal and palatine lesions showed periods of quiescence and exacerbation over the next six months. The process was held in check by use of the actual cautery, and the patient was thereby kept reasonably comfortable.

On February 4, 1929 (eight and one-half months after tonsillectomy), the patient consulted me because of dysphagia and a mechanical obstruction to swallowing. The socket of a tooth removed several weeks before had not healed, and the patient had been without food for several days, because even fluids passed the pharynx with great difficulty. A rounded, smooth swelling protruded from the posterior wall of the pharynx and extended downward, to the right of the midline, to a point just above the larynx. There was no inflammation about this swelling, and it was soft, doughy, and only slightly tender to touch. There was a profusion of scarred areas over the entire pharynx, resulting from healed ulcers, and there were other areas of new ulceration.

One week after this mass appeared, .1 mg. of O. T. was given subcutaneously, and forty-eight hours later there was a local reaction, about 2 cm. in diameter, at site of infection. There was also a marked inflammatory reaction noted about scars of pharynx, new ulcers and the retro-pharyngeal mass. General malaise and a temperature of 100 degrees was noted.

A portion of the tissue over the retro-pharyngeal abscess sloughed in time, exposing the thick caseous contents. A portion of this abscess wall was removed by the actual cautery and microscopic examination by the University of Virginia Department of Pathology revealed: "Marked chronic tuberculous inflammation of lymphoid tissue, with many caseous areas. The mucous membrane is normal, except in one area, which is apparently ulcerated."

The ulcerating process about the abscess wall extended well down toward the larynx, but was checked by cauterization before this organ was damaged. The arytenoids were red and swollen and there was more hoarseness. This flare-up was quieted and the patient was lost sight of for some time.

In June, 1929, in spite of warnings, the patient was married. A few months after this (October 10, 1929) she presented herself for treatment again. She weighed only 114 pounds, and was the picture of profound toxemia and prostration. Her face was flushed; her temperature was 101.8 degrees, and the cervical glands were again swollen and tender. Her throat showed great distortion from scar tissue traction, and new ulcerations were present. The arytenoids were again inflamed, but no ulceration was observed in the larynx.

The patient's condition was alarming and she was accepted as a patient by the Blue Ridge Sanatorium, November 5, 1929. She remained in the sanatorium only three days, because of homesickness, but the institutional staff was able to accumulate the following data:

Physical examination, including lungs, negative, except for enlargement of the thyroid, and presence of throat lesions. X-ray examination of the chest revealed nothing different from first stereoscopic plates.

Pulse, 70 per minute; respiration, 20 per

minute. The temperature ranged from normal to 99.2 degrees in the afternoon.

Urinalysis, negative, except for numerous pus cells.

Feces, negative.

Stain for Vincent's, negative.

Sputum, positive, twice—Gaffehy, II and III.

Tuberculin test with .1 mg. O. T., negative.

Blood Wassermann, 4 plus, and this was verified by a 4 plus Kahn test one month later.

Treatment for syphilis was refused, and nothing more was heard from the patient until September 18, 1930, twenty-eight months after the tonsillectomy. She presented herself, after many requests, for observation. She feels well, does all her own work, has had no sore throat since shortly after returning from sanatorium. Her weight is 138 pounds. She looks well and her pharynx is entirely healed by scar tissue, with great distortion of pillars, and the soft palate. The palate retains its large perforation, about 2 cm., and a small one, about 1 mm., in diameter. The uvula is pulled to the left side, but no unhealed ulcers are present. The larynx is normal and the cervical glands are palpable, but comparatively small.

The following laboratory reports were obtained at this last visit:

Stereoscopic chest plates, unchanged from last X-ray examination in November, 1929.

The sputum was negative for tubercle bacilli.

Urinalysis, negative, except for an occasional leukocyte.

Hemoglobin, 70 per cent, by Dahli method.

White cell count, 12,600. Red cells, 3,140,000.

Lymphocytes, 48 per cent and neutrophiles, 52 per cent.

One blood Wassermann, and one Kahn test were negative, but one Wassermann was 2 plus.

Summary

I. The preponderance of evidence is in favor of the fact that primary or exogenous tuberculous infections of the tonsils do occur. About 4.2 per cent of all tonsils removed show microscopic evidence of tuberculosis.

II. In nearly all of these cases the cervical lymph nodes are infected, secondary to the tonsils. Tubercle bacilli can pass through the tonsils to the cervical glands and leave no evidence of the disease in the tonsils.

III. Tonsil tuberculosis is probably nearly always due to the ingestion of the organism, rather than air-borne.

IV. The infections are usually at the upper pole of the tonsil and extend into the cervical chain by lymphatics situated in the lateral wall at the apex of the fossa. This fact renders it difficult at times to be sure that the tonsil has been cleanly removed, particularly in severe infections, where there is an apparent dehiscence of the fibrous capsule.

V. Tuberculous tonsils should be removed, as they nearly always heal normally, but the possibility of ulcerative extensions to the adjacent tissues should be borne in mind.

VI. Tuberculin, heliotherapy, and X-ray should be used in conjunction with constructive measures, but the actual cautery seems best for local control of the ulcers.

VII. A case of apparently exogenous tuberculous infection of the tonsils, complicated by ulcerations of the soft palate and pharynx, has been reported.

VIII. This case presented two negative blood Kahn, one blood Wassermann and the therapeutic tests for syphilis. She was married, and in a few months two 4 plus blood Wassermann tests were reported. In view of these tests, two positive sputum tests, a positive tuberculin, and two biopsies, showing typical tuberculous lesions, it seems rational to assume that the syphilis was acquired by marriage.

IX. After two years this patient presents a picture of an entirely healed throat, without tuberculosis elsewhere in the body. By the great improvement, following infestion with syphilis, some intimation of the possible antagonistic symbiosis of the two diseases in this case is suggested.

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CAN INTESTINAL ADHESIONS BE DELAYED?*

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This discussion is confined to those cases where drainage materials are used.

If the question is put up to the average surgeon he will without hesitation reply, "No!"—that such adhesions will form in a few hours around any form of drainage material and promptly stop the drainage.

Investigation shows, however, that these same surgeons are unconsciously making free and increasing use of the very procedure that does delay adhesions. They are getting more and more fluid into the circulation of the patients, and, as we will demonstrate, this positively does put off the agglutination of the peritoneal surfaces for a length of time depending on the amount of fluid administered and absorbed.

The average case of ruptured appendicitis with pus in the free peritoneal cavity has so-called drainage material, cigarette drains, inserted, and frequently the patient is not even elevated.

Many of these cases are otherwise vigorously treated by large amounts of fluids put into the circulation in different ways, by lavage, by stimulation and at times by enterostomy.

The resulting mortality is very high, in some sections, going up to 30 per cent or more.

We believe that we have proven that adhesions *can be delayed*, and that the *proper* drainage materials will *drain*, just as long as necessary, certainly for three days and nights.

But real drains must be used, the proper elevated and side position arranged, and fluids administered in as large amounts as the patient will stand.

Tubes must be large, soft, thick-walled and non-compressible. They extend down into the pelvis and in other directions if indicated. They are brought out at the outer (right) end of a transverse incision, the bed elevated sufficiently high, and patient placed far enough on the right side, so as to make the outer ends of the tubes their lowest point. Fluids will gravitate readily down to the tubes and run out into the dressings. Wicks of gauze placed lightly in the tubes will facilitate the drainage.

As much salt solution as the rectum will absorb is administered by the "Murphy drip" with a visible dropper. At least 60 drops a minute will usually be absorbed to start with.

In addition saline may be given sub-cutaneously and intravenously as indicated.

With such a procedure carried out very strictly in every detail, there will be a *continuous discharge*, requiring frequent change of the outside dressings and, instead of diminishing, the discharge will *increase* gradually in amount, and become steadily thinner.

If the proper position of the patient is maintained, on dressing the wound morning and night, the wicks, which should then be changed, are wet with discharge, yet, on passing a catheter attached to a syringe down into each tube and aspirating, little or no fluid is found, simply because gravity has carried it out into the dressings on account of the perfect position of the patient.

Nothing should be given by mouth except water until the stomach seems safe, the patient being nourished by intravenous glucose, though usually simple fluids may be administered on the second or third day.

It is rarely necessary to resort to lavage.

The abdomen remains soft, and the bowels move easily from low enemata, though frequently voluntarily.

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Rocky Mount, N. C., December 8, 1932.

These patients require the most perfect watching and care, especially in keeping up the rectal fluid. The tubes may usually be removed about the fifth day, being replaced by simple rubber dam drains (without gauze) and later the sinuses are readily sterilized by Dakin's solution and Dakin's tubes.

We formerly thought badly of the method advocated by Willis, of Richmond, in which many of the severe cases had the operation delayed, but the Fowler-Murphy method was used vigorously, the operation being performed after a few days, following Ochsner.

In the light of our later experience, we feel more kindly towards Willis' method, recognizing that the Fowler position brought the pus down to the pelvis, where it was more accessible and safer. And the "Murphy drip" forced fluid into the circulation and delayed the formation of shutting off adhesions.

Our method makes use of gravity by our right side elevated position, delays the formation of adhesions by getting into the circulation a large amount of fluid, but in addition we operate without delay and use *ample drainage materials.*

If sufficient fluid is absorbed into the circulation, we believe that the peritoneal surfaces become excreting rather than absorbing surfaces; otherwise, the drainage into the dressings would not increase in quantity and would not become thinner.

The best test of the procedure, however, is the fact that practically all of these patients recover, and, not only that, but there are rarely any complications.

In the earlier cases, we did occasionally have difficulty in moving the bowels, and in two instances had to do an enterostomy.

We believe now that we did not then realize fully the vital importance of "every minute" watching of the case, and more than likely at times the "drip" was not constant.

Delaying of adhesions is important in many other than appendix cases, such as gun shot wounds of abdomen, drainage following ruptured duodenal ulcer, and other infected abdominal conditions.

Sarah Leigh Hospital.

The modern world thinks too much of its rights, too little of its responsibilities.—*John D. Rockefeller, Jr.*

ON THE ORIGIN AND THE SIGNIFICANCE OF CERTAIN FORMS OF BEHAVIOR.*

JAS. K. HALL, M. D., Richmond, Va.

The catechism declares that man's chief end is to glorify God and to enjoy him forever. But man's chief interest is his fellowman, and the particular aspect of our fellow creatures that most concerns us is their behavior. Our concern about our fellow mortal constitutes the reason for the existence of the daily papers, filled largely with gossip; for our interest in history, biography, philosophy; it accounts for the theatre, the movie, and the radio. All the countless other facilities for transferring human thought would be little used but for man's over-weening curiosity about what his fellowman is thinking, saying, and doing.

This enormous concern about the behavior of a mortal dates from the very birth of the individual; even while the little one is only a senseless mass of tissue the friends of the parents must learn to tolerate the wonderful stories about the infant's remarkably precocious conduct; wisdom is in its face from birth; plan and purpose are in each of its reflex movements. And someone continues to cherish commendable concern about almost every individual's behavior from birth till death terminates the activity. You will probably not doubt my emphatic statement that man's chief concern is man. Interest in human behavior and the hope that something can be done about it causes schools to be maintained at great cost; churches to be established, legislative bodies to be convened, and courts to be created. We may even go so far as to believe that we can create behavior of a certain type and inhibit behavior of another kind.

Although some of us may belong to that school of conduct in which a considerable degree of elasticity in behavior is permitted, yet we all carry in our minds more or less definite standards of conduct, and upon deviations from this standard in others we look with disapproving eyes. By some mental process which we cannot understand we have formulated what we designate normal conduct. Deviations from this normal are dealt with by organized society. In each town and in each county is a prison, and at the state's capitol is the great prison; and here and there in the state are institutions, big and little, for protecting and

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restraining those whom we think to be without capacity to guide themselves. And to make it still more easy and certain for us to guide the steps of others that would wander out of the chalked-out pathways, some impressive forms of punishments have been ordained about which I may speak later. Civilization would be willing to make many sacrifices, I imagine, before she would be willing to give up her punitive ritual. Someone should formulate a thesis on the philosophy of punishment.

Although human behavior is 'round about us, and in us, and as familiar to us in our daily lives as sunshine, air, and water, yet we know essentially nothing about it. It is our assumed and superficial knowledge of it that we are interested in, and not the phenomenon itself. We are most profoundly ignorant, indeed, of the familiar things. We know little about water, about air; almost nothing about the marvelous properties of light and sunshine; little about life, and nothing at all about death. The physician today knows almost as little about measles, chicken pox, and mumps as Hippocrates knew. And I hope no one knows so little about anything as we doctors know about the so-called common cold.

Is it little wonder that we are ignorant of human behavior? We have until lately made no detached and dispassionate study of it. Nothing was known of the structure and the functions of the human body until three or four hundred years ago. Think of the mighty intellects that had no idea what the heart and the blood vessels were for until William Harvey found out soon after 1600 what purposes they serve! Our ancestors used to admire the human body and rhapsodize about it, and wonder about its inner doings, but they knew nothing about what was happening within the skin. Shakespeare, about 1600 or a little later, made Brutus say to his wife, Portia, that she was as dear to him as the ruddy drops that visited his sad heart; but Brutus knew nothing about the blood visiting his heart, or any other organ of his body. He had no idea what his heart was for.

Dismembering and dissecting our fellowman is grim and distasteful business, even in the dissecting room, and it was a sin and a violation of man's and God's law until only a few centuries ago. There was no objection at all to men's tearing each other to pieces in battles, or in the infliction of punishment for violation of laws, but quiet dissection of the human body that had died of disease was dreadfully sacrilegious. Finally it became legitimate to try to find out how we are made on the inside, and then medicine began to make progress. But it hasn't made much progress yet—not when we doctors are talking amongst ourselves; medicine has just about conquered all diseases only when we are talking to non-medical people. The most doleful and hopeless mortal is the sick physician who has to submit himself to his fellow of like ignorance. How do ministers make it when in need of spiritual consolation; and lawyers when in need of counsel?

Would you object to having yourself laid open and turned wrong side out from your chin to the lower reaches of your abdomen? Certainly you would, even if you knew you would survive the procedure. But you would object much more to having all of your emotional and mental life laid bare for inspection. We not only dare not permit others to know our mental life; we do not even allow ourselves to face it. And for that reason man has lived in ignorance of himself. Only recently have plans been set on foot to make possible thorough exploration of the human mind. And these plans have met with even more violent resistance than was arrayed against dissection of the human body in the middle ages. But mental dissection is as necessary as dissection of the human body. Psychoanalysis, as carried out by Freud and by others, constitutes a dissection of the structure of a mortal's mental and emotional life. The surgeon can actually make his patient proud of the length and the coils and twists of the vermiform appendix that he so dextrously removed; and make the woman proud, too, of the number and the size of the gall-stones he scooped out of her gall-bladder; but I have seen few individuals who cheerfully and pridefully yielded up their buried mental and emotional treasures. Discover for many a woman her real opinion of her pastor or of her husband and learn how grateful she is. Disclose to many a partisan voter his unvarnished opinion of his favorite candidate, and thereby lose your medical client. Stand your naked mental and emotional self before your own eyes and see how quickly you flee away. A posse would be organized within an hour to scour the woods and to drag the mill pond for your lifeless body. We are not looking for the truth. On

the contrary, we are using up our energy in protecting our prejudices, preconceived opinions, and our ignorances. There is no such thing as intellectual honesty. It is not possible for a mortal to be honest. But we entertain the comforting delusion that we are in search of the Truth.

Doubt has been expressed about man's ability accurately to define anything. Words constitute only a few of the symbols of which we make daily use, and we use words to stand for things, and we know that a symbol represents only partially the object for which it stands. Someone has said that only a few worthwhile things have been said, and that mankind ever since has been wondering what those statements mean.

But behavior, whatever it may be, is not an imposition from the outside. The tendency to behave inheres in the living thing, whatever it may be. I am not at all certain that behavior is limited to living matter. Whatever the object does, or does not, constitutes conduct. Behavior is the mental or the emotional state made manifest—it is the mentality mechanized. Behavior has to do with movement. In reference to living things behavior relates to the effort of the organism to adjust itself to its environment.

That quality in living matter, whether high or low, that makes behavior of some kind possible is irritability. In everyday language we are apt to think of irritability as a disagreeable quality, but we give the term an unhappy meaning. In scientific language irritability means only the capacity to respond to a stimulus—and the world in which we live is filled with stimuli. Responsiveness constitutes behavior. The gardener, the florist, the farmer, know of the potential responsiveness of seeds; placed in the proper soil at the right season they become irritated by warmth, moisture, and darkness, and spring into plants. The lowest forms of life—the infant mosquito in the stagnant pool; the tiny fish in the stream; the day-old chick; the new-born child—all, by their inherent irritability, are made responsive to the myriad stimuli around them, and behavior —conduct—is the result. No one would feel like asserting that such behavior is life, but it makes life, growth, reproduction, and all other activity, possible. This effect of the environment upon the individual living thing, and of the living organism upon its surroundings, mutualizes life. In contemplating this effect we reach the inescapable and dignified conclusion that no organism, large or small, is so inconsequential that it does not make some contribution to life. We talk much about the individual and about the environment as if they are different things; are they differentiable? Some portion of the environment tomorrow becomes a part of the individual; by tomorrow some portion of the individual likewise becomes a part of the environment.

By the study of anatomy we learn of the structure of the body; physiology teaches us the functions of the different organs; but behavior involves the entire individual, and when we are thinking of the whole-man or whole-woman activity, then we are thinking in terms of psychology. I know of no objection to thinking of entire-individual activity as mental—as mind. We are prone to look upon conduct—behavior, if you please—as an expression of consciousness, but such an assumption is hardly justified. We behave, to be sure, when we are asleep; when we are anaesthetized—i. e., robbed of consciousness; and when unconscious as the result of injury or of disease. Even the lowliest form of life—microscopic life—germs, and other small cells—behave in definite fashion, yet no one would ascribe consciousness to such low forms of life. But wherever there is life there must be that quality that we may speak of as mind. I am preparing myself for the statement that little of our behavior is of either conscious or of intellectual origin. But that does not mean that we are senseless creatures. It means, on the contrary, that we are saturated with sense, with behavior-resources, that have nothing to do with what we think of ordinarily either as consciousness or as intellect.

Were I even competent to enter upon a metaphysical discussion of the nature and the origin of the mind, there would be no place for it this evening. We are concerned in our daily lives with the pragmatic aspects of behavior in others and in ourselves. The medical man's training inclines him to the belief that man has kinship both in structure and in origin probably with all other forms of life; and the story of man as a special creation may appeal to his ecclesiastical orthodoxy but not to his biological and physiological judgment. Even in the human body there are evidences that man in some form has long been upon

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the earth—how many millions of years would involve only speculation—and that man's present anatomical structure is the result of changes that have been slowly evolving him out of an exceedingly low order for aeons and aeons. In other words, man's body is probably exceedingly old. Let us assume, and I am becoming speculative, indeed, that the human body began its existence in the sea or in the marshes as a structure of one cell, and that unit so small that the unaided eye could not see it. If you are willing or able to go with me in that assumption, then you will experience no difficulty in believing that our ancestors have been on the earth for a long time. Can you believe, as I do, that man's original ancestor, the one-cell structure, was characterized by some sort of behavior? Surely, otherwise, that many-times great-grandfather of ours would have perished. We are compassed 'round about by ignorance, and weighed down by humility, but we are obliged to think, even though we know that most of our thinking is wrong. But I am asking you to join me in the tentative belief, at least, that our behavior had its beginning 'way back there millions of years ago when our bodies had their beginnings, and that our behavior is as old as our bodies.

Perhaps because our primitive ancestors crawled out of the slush and came into a more complex and difficult environment our ancestral bodily structure became more complex and more efficient, in order to deal with that more complicated environment. In the same fashion, and along at the same time, our ancestral behavior became less simple and became more complicated. Let us suppose that our earliest ancestors were without hands, feet, eyes, ears, noses, and taste. When in that state their behavior must have been primitive indeed. Then there were no schools, prisons, churches, political conventions, Sunday-school picnics, and no medical societies and no professional clubs. But a nervous system gradually developed in our remote relatives, portions of it were pushed as far out as possible into eyes, ears, noses, and tongues, and special senses were evolved, and our ancestors acquired enormous information about their respective neighborhoods. In other words, they became much more easily irritated in countless ways, and in consequence their behavior became much more complex. Eventually, but not for a long time, what we think of as a mind developed, and finally an intellect and emotions and feelings. I have thought of these qualities, not as products of the body, but as parts of it, just as I think of color as an inherent property of the eye.

That first type of behavior that seems to have in it conscious purpose we must think of, I suppose, as instinct. Now, mind you, I did not say such behavior is consciously purposeful; I only said that it might seem to be directed. We see such activities daily in the so-called lower animals. All of their activities have to do in a general way with preserving their lives and perpetuating their kind. They feed and they breed; and so does man. We see instinct at work in fine fashion immediately in the newly-hatched chick. Taken after its first day of life from the darkness of the incubator and placed in a brooder-house, it responds perfectly to the presence of three objects it has never seen before—the brooder, with its warmth; food, and water. If the chick did not make use of these things it would promptly perish. Yet in the use of none of them has it had instruction. The behavior of all living things, vegetable as well as animal, is motivated by instinct. Of our own behavior that is likewise true. Our conduct is modified by higher qualities, but it is instinctive in origin. Have we any adequate conception of the meaning and the influence of instinct? Hardly. I think of all life, indeed, as a more or less organized system of instinctive cravings, hungers, desires. And I think, too, of all activities merely as efforts to satisfy such cravings. Instincts are tendencies to behave in a certain fashion. Long ago, James, the psychologist, defined instinct as the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without having been trained in the performance of the acts leading to those ends. The individual behaves in instinctive fashion because it cannot do otherwise; it cannot help it. We are mistaken in seeing either virtue or mischief in pure instinctive behavior. The behavior results from the structure of the organism and the environment. Instinct simply is. It has no respect for law, ethics, place, or time. Instinct is both as remorseless and as patient as time. It cannot be destroyed; it knows nothing about negation; and frequently it cannot be controlled. It is as unceasing and as persistent and as un-

feeling and as impersonal as gravity. It causes the new-born child to cry, to suck; later to crawl, and to walk: the mother's love and her labors and sacrifices, are expressions of it; but—are they virtues? Most mothers in the lower orders exhibit the same attitude toward their young. Love, fear, hate, revenge, jealousy, courage, pugnacity, emulation, acquisitiveness, the martial spirit, industry—are all of instinctive origin. This strange force dominates the world of life as thoroughly as gravity controls the world of matter. Has gravity pity, consideration, respect, compassion? Has instinct any such qualities? It is—and no more. I speak of it at length, not because I understand it, but because I recognize it and respect it. Perhaps it is God at work in His world. I speak of it because it all but dominates us—in the home, in the school, in the church, in society, in all our lives. All man's tragedies result either from his yielding wholly to its influence, or because of his unsuccessful conflicts with it. Instinct mates the sexes, builds homes, begets children, sends men to wars, destroys, brings them back to peace. Man's success is evidence of his ability to make terms with his instinctive urges; his failures are the result of his inability to get along with that inherent drive that permeates us all. It is the mightiest force in the world; yet we often deny its very existence in us; we erect countless taboos around the sexual instinct; we think, too, often of instinctive conduct as base or degraded. We should respect it, and try to understand the great purposes in life it subserves. Instinct is our most natural quality. It is our naked, natural selves.

But in civilized man instinct is not the sole source of behavior. Thousands of years ago man's increasingly complex nervous system had already developed to the extent that he had acquired more information about his environment than any other animal. Sensations had been pouring into his brain from his eyes, ears, nose, tongue, and from all his surface and all of his interior, and out of these sensations experiences had been evolved, and in such fashion man slowly acquired those qualities spoken of as reason, judgment, will, volition,—in other words, man became intellectual. Our ancestors acquired knowledge and became conscious of its possession. They were no longer wholly dependent upon instinct to guide and to protect them in all their activities. Man became able to contemplate himself. He became subjective as well as objective in his thinking. Is any other animal save man able to contemplate itself? But in developing an intellect and in acquiring character—moral qualities—man lost none of his instincts. He found himself saddled with two sources of behavior, and ever since he has been having trouble on that account. His instincts had formerly been in complete charge of him; now that he had developed a mentality he must pay some heed to its suggestions. What was he to do?

Whenever two authorities coexist conflict is certain to arise. An arbitrator in such a circumstance always becomes necessary. We establish means of arbitration in our daily lives. Each state and the nation has its supreme court. In the home the parents should be competent to serve such purpose. Life is filled with arbitrators—with too many of them, perhaps. Each individual had to be provided with a final authority to deal with the conflicts that might arise within him between instinctual urges on the one hand and the intellectual tendencies on the other. This arbitrator, or censor of personal conduct, we call in our every-day speech conscience. Socrates called his censor the voice. The decisions of this umpire, you know, are often derided and disregarded, even as the decisions of the umpire on the athletic field. But some sort of censor is necessary. The only sort of punishment that is effective is that inflicted from within, and not from without, the individual by the personal censor. To the good citizen criminal laws are insulting; to the bad citizen, futile. It is little wonder that the censor encounters difficulty in its administrations. The instincts are ages-old, and they naturally resent interference with their activities. The intellect, though of recent development, feels itself superior to mere animal instincts, and the intellect naturally expects the decisions to be in its favor. The mind claims, of course, to have on its side all the higher qualities—reason, justice, decency, and morality. I object to a paternalistic government; to an authoritative religion; to the functions of society exercised by so-called foundations, because all such exercises imply the substitution of another's censor for the individual's censor. Society has the right to have an inefficient government if

it so desires, and the individual the right to risk hell, if he is willing.

The function of this censor is to make the individual fit for that state of society that we call civilization. Consequently we might give at least brief consideration to the origin and the nature of this important mental quality. Whence cometh it? What is it? The infant in the mother's womb is in a state of relative omnipotence. There all its wants are supplied. It is required to give no thought to sustenance or raiment. The unborn infant is nourished and clothed by its mother. But birth changes this perfect state. Birth brings physical detachment from its mother. The child immediately after birth must breathe by its own effort and find the nipple and suck, or else it will straightway perish. Consciously or unconsciously, the child realizes its dependence on its mother, and later also upon its father. To the child, for some period of time, the parents are omnipotent; they are the reservoirs from which all its wants are supplied; they are omniscient, as well as omnipotent. The child not only looks to them but up to them. Later, other authorities enter into the life of the child —other children, perhaps; elder persons; the teacher; the preacher; the policeman; other officers of the law; and still later the law itself, in abstract fashion, both civil and moral; and, finally, the individual's conception of God. From such varied and diverse sources the censor—conscience—is evolved, and this surrogate of the parents takes charge of the individual, for good or for evil, and deals with the person throughout life. All of us realize even in our mature adulthood that in contemplating some particular course of conduct we presubmit it, as it were, for approval or disapproval, to some authority. The valid criticism that can be sustained against our civilization today is that the individual is trying to guide himself by a censor of governmental origin rather than by a personal censor. That constitutes the difference betwixt paternalism and individualism. Often we speak somewhat loosely of this censor as public opinion. The quality of the censor, one can easily understand, is of enormous consequence. Its very function is to fit the individual for civilization. Its purpose is personal socialization. Upon its quality depends the success or the failure of the individual as a member of the social structure. Realization of that fact is tied up in the profound statement that a child trained up in the way that he should go will not depart from it, even when old age has come. The statement emphasizes the importance of surrounding the child with all good influences. After all, behavior must be largely a matter of imitation, of emulation, of patterning after examples.

But the censor is called upon to attend to more than the instincts. One never knows how much one's possessions are until one moves—changes residence. Those of you who have done this have realized the extent of your material holdings—many of them of little value, to be sure, but not of such inconsequence as to be thrown away. Every home is provided with a basement and an attic and with little-used closets in which the things are seldom used, or not used at all, can be kept; and in which the things can be kept that we ourselves do not wish the neighbors to see at all. But our mental and emotional accumulations have been taking place much longer than our material accumulations, and these immaterial accumulations are much more diverse, much more difficult to store, and much more difficult to live with. After we have lived for some time our store of knowledge becomes so great that we cannot keep it all in the same room. The basement into which we relegate out of sight and out of mind, if we can, all the not-needed and all the annoying thoughts, feelings, and memories, is called the subconscious. Into it we repress the things in our emotional and mental life that we are ashamed of; that we wish had never occurred; that we do not like for the neighbors to know about; into such a region we try to send clear out of our own sight all painful and embarrassing memories; and into the same region of the sub-conscious we send also all the knowledge that we do not need in our daily lives. The process of ordering things into the sub-conscious domain and keeping them there is known as repression. It is the business of the censor to attend to these repressions. The neuroses and the psychoneuroses—fear states, anxieties, hysterias—arise out of the conflict betwixt the individual's instincts on the one hand and his intellectual and moral trends on the other. This conflict is within the individual. The psychoses — insanities — manifest the conflict betwixt the individual and the outside world—a social struggle. If the censor happens to be-

come careless and to let out the wrong thought at the wrong time and in the wrong place the mischief is to pay. Under such circumstance the neighbor might find out what you really think of him; and we doctors might discover by the same process what some folks actually think of us. Slips of the tongue and slips of the pen are thought to let out the actual truth, while the censor is nodding and not keeping a firm foot upon the lid. The rebellion of the masses against the political censor constitutes revolution: when the situation becomes intolerable nothing else but revolt is left for the masses.

Out of this enormous region of the subconscious come all dreams. They come out, too, while the censor is inattentive to his duties. We often laugh amongst ourselves about our foolish and fantastic dreams. There are no such things. Every dream is the disguised representation of a wish or a fear. The dream fulfills for us in our sleep what we unconsciously long for when we are awake; or the dream brings to realization our conscious fears. Why are so many dreams apparently absurd and seemingly meaningless? Because of the clothes they wear. Dreams disguise themselves in order to pass the censor unidentified, as adults conceal their identities at a masked ball. The dream-content affords a better index to the mental life of an individual than that furnished by the content of conscious thought. The ancients understood this fact, and all ancient literature, sacred and profane, is filled with accounts of dreams.

The censor keeps the lid on—if it can. But many things lift the lid. What? Sometimes an emotional storm, such as fear, anger, anxiety; alcohol, and other drugs; the lingual indiscretions of the drunkard are well known. The patient emerging from general anaesthesia wishes to know if she said anything terrible while she was asleep. The unconsciousness, or the delirium caused by injury or disease, often permits things to slip by the censor and to find embarrassing expression in every-day life. With the vaudeville wit and with such characters as Will Rogers we join in the laughter evoked by the fun poked at the content of our own subconscious accumulations. We are safe, I suppose, so long as we can laugh at ourselves and allow ourselves to be laughed at.

May I near the conclusion ask you to think of this immaterial state called mind somewhat as you would think of a particular material structure? Let yourself imagine a three-story, three-room house. The largest room is the basement; the next in size is the ground-floor; the third-story room is the smallest. In the well-lighted third-floor room is our every-day knowledge that is immediately available and that we make constant use of. This room is the busy every-day room of the mind. The mental tools in constant use are kept there. Beneath the topmost room is the larger ground-floor room. In it is stored the acquired knowledge that one less frequently needs—the accumulations of personal acquisitions resulting from education, and experiences of all sorts. Here we find the knowledge that can be drawn on through memory—the multiplication table; the Twenty-Third Psalm; Poe's Annabel Lee; portions of Patrick Henry's great speech; Lincoln's Gettysburg address; our professional knowledge is stored here; and into the same room of the personal subconscious we have sent also throughout the years, in order to get them out of annoying reach, all the mean and ugly and low-down reprehensible and ungodly and vile things that we have thought, said, and done. This room houses the personal historical past. In the basement beneath this room are housed the enormous herd,—may I so speak of them?—of instincts; all those tendencies and trends and urges and impulses that we acquired by inheritance from our ancestors from the very beginning of animal life. We know something of the nature of some of the personal instincts, but almost nothing of the racial instincts—the inheritances from our ancestors of millions of years ago. The basement room houses the racial historical past.

We ought to be willing, at least, to understand that behavior is no simple affair. Although it is provoked from without, it springs from within. But it may have its origin in the third-story room of the acutely conscious every-day life; it may spring from the room beneath—from the personal subconscious; or it may represent an emergence from the basement room beneath all, and be a manifestation pure and simple of an ancestral inheritance through instinct—recent or remote.

What determines the quality of human behavior? We have already discussed its origin. The three factors that we have been talking about each and all have their voice in influenc-

ing conduct. No change can be brought about in the instinctual inheritance. Nor can we do anything to the weather. But we can anticipate its changes and adjust ourselves in some fashion to its variations. We must not despise our instinctual inheritance; it kept our ancestors alive for millions of years, and it motivates without our being bothered about it most of our every-day conduct. Our daily behavior is enormously affected by the content of our repressions. Thoughts and emotions and memories do not like to be crowded in a room, and they are constantly trying to break out. But they can emerge only through the medium of behavior; and if we behave in non-conforming fashion society will do something to us. The third-floor room, filled with immediately available knowledge, has somewhat to do with our daily conduct, but not so much as we think. All of our activities are instinctive or emotional in origin, certainly subconscious, and intellect, and even consciousness, has little to do with what we are and what we do. Now, over these three domains the personal censor presides, and the censor's job is not an easy or successful job. The censor occupies the position not unlike that of the master of the house in which there is mother-in-law, daughter, and son-in-law. Discord and not concord is the essence of their lives. But the function and the hope of the censor is to make the human animal a civilized, social creature. The censor must either keep in repression many of the instincts, or else release their energies in such a way as to make them not objectionable, if not helpful. The attractive and sprightly young lady may be the social leader for a long time; dancing, playing cards; unwilling to give up her good time. She discovers finally with a shock at thirty-five that her friends are all married. There is no hope of marriage for her. She becomes commendably interested in church work; the head of all the missionary activities; president of the book club, and active in politics. She has sent her instinctive energies along new pathways. We say that she has sublimated; and that was a splendid thing for her and for the community.

What is good behavior and what is bad behavior? Good behavior is that approved by the community. It is not good because of some intrinsic quality in it. Behavior rated good today may be outlawed by next year. Bad behavior is that disapproved by the community. Its inherent quality has little to do with its standing. Though rated bad today it may be in excellent standing five or fifty years hence. Good behavior represent the individual's desire and ability to conform to a good standard. Many influences affect the capacity to adapt one's self—to conform. The censor may be inefficient, and make possible the emergence into conduct of forces from beneath—instincts and repressions—in the form of so-called bad behavior. Such a theory would offer tentative explanation of much delinquency. The mentally subnormal individual is generally not badly inclined; his judgment is infirm; his censorship poor; he is too susceptible to outside suggestions, and unfortunately there seem to be for him more evil than good suggestions. The censor, on the other hand, may be in good order, but the instinctual and subconscious forces may be irrepressible, and come forth as conduct of non-social form—inadequacy, crime, insanity. The circumstances, even the environment, may be factors in affecting behavior. Bad example or evil companionship may weaken the influence of the censor, or add force to the urges of the instincts or weaken the repression. A wholesome environment may, on the other hand, make possible the continued stabilization of an unsteady character.

Conflict is the very essence of life. Disequilibration is but another name for personal existence. All activity results from differences of tension. There are only two objects in existence—the individual and his universe. The individual is individualistic, unlike every other individual, and his universe is unlike the universe of every other mortal. Consequently there are many types of behavior. That is troublesome but well; life would be intolerable if all of us behaved alike.

Civilization is an unnatural state. Man is an animal; he is the only animal that has ever attempted to civilize himself. Human history records the long list of his failures in that direction. Warfare is only another name for mass-conflicts of human behavior. The instincts, the primitive motives and guides of human behavior, have no interest in laws and religion and schools and morals. They are concerned only about the satisfaction of their natural hungers. All that civilization does constitutes an attack upon instinctive trends. Almost every legislative enactment penalizes

natural, instinctive, human behavior. That is why the legislator is looked upon with suspicion; that is why the people breathe more easily after the legislative body has adjourned; that is why we have so little respect for statutory law; we know that it too often begets sham and hypocrisy and pretense and unnaturalness. The two most potentially dangerous assemblages in our civilization are our law-making bodies and our courts; the one to formulate laws; the other to interpret and to apply them. Whenever the criminal is on trial, the civilization against which he rebelled is likewise at the bar. The fault is mutual. Nobody likes a reformer; everybody feels in a vague sort of way that the reformer is trying to formulate in others by force a type of behavior that he is unable or unwilling to set up in himself.

Civilization is a failure—often. Every prison confirms that statement; every reformatory proclaims its truth; every inmate of an insane asylum represents the failure of the individual to measure up to the social demands of what we euphemistically call civilization. Every drunkard and every drug addict cries out through his addiction against man's fabrication that was too much for his strength—civilization. Man's unhappy and unsuccessful attempts to civilize himself and his kind are responsible for all the tragedies of history. One of two things is true—we are either unfit for such civilization as we have fabricated, or it is unfit for us. Occasionally in the court room I am asked if the prisoner knows the difference betwixt right and wrong. What in God's name is right and what is wrong? What does a puny mortal such as I know about either? Isn't right today wrong tomorrow, and vice versa?

If the present unhappy period in which we are existing will only give us a keener appreciation of the eternal verities I shall believe that we have been compensated for our suffering. If we can be got out of our present state of sham and pretense and hypocrisy and airs and bombast and ungodliness and be made to realize that naturalness is not sinfulness and that sham is not a virtue; if we can be made to know that we cannot deceive God for a moment and ourselves even for only a brief period,—then I shall be thankful that I have lived through this cosmic cataclysm. Have we not been told from on high that unless we become converted and become as little children that we cannot enter into the kingdom of heaven? Little children are natural and honest and decent and sincere. I doubt if the statement refers to a geographical location. I think of it as meaning a state of mind and of emotions—a spiritual state. All great souls have had the thoughts of God. Was not Omar Khayyam inspired by God when he sang:

I sent my Soul through the Invisible,
Some letter of that After-life to spell:
And by and by my Soul returned to me,
And answer'd "I myself am Heav'n and Hell."

ACUTE APPENDICITIS AS OBSERVED BY A COUNTRY DOCTOR.*

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I am attempting to write something on the subject of acute appendicitis as observed by the country practitioner. As you perhaps surmise, I have nothing that is scientific, nothing that is original, but I hope something helpful. Each member of the profession has a place in the scheme of things professional and, with reference to appendicitis, I have found my place to be that of beating the brush, scaring out the game and getting it going in the right direction. This, it seems, would be an easy task, yet it requires some thought and some knowledge, because if we should be hunting wild turkeys, we would not wish to drive in Jack rabbits. What I have to say has mainly to do with the importance of an early diagnosis, the difficulties which we have, in many cases, of arriving at a diagnosis, and the unavoidable delay in getting these cases in the hands of a surgeon at the proper time. Having had more years of experience than I wish to admit, it has been my fortune, or misfortune, to see quite a large number of cases. That which concerns and distresses me most is that far too many cases are allowed to rupture and to reach the surgeon with all sorts of complications. It is a pity that every case of appendicitis could not be seen and operated upon by a competent surgeon before such serious developments occur, thus endangering the life of the patient, prolonging the stay in the hospital, and certainly not adding anything to the reputation of the surgeon or the attending physician. I do not believe, however, that usually it is the fault of the general practitioner.

*Read at a meeting of the Piedmont Medical Society of Virginia, at the University of Virginia, November, 1932.

Some years ago a prominent Virginia surgeon read a paper at a State Medical Society meeting on the "Increasing Death Rates Following Operations for Appendicitis." In his discourse he laid the chief cause of this at the door of the general practitioner and especially the country doctor. I felt that this was unjust. There was a time, many years ago, when we undertook to treat the first attack of appendicitis by putting the patient to bed, applying laxatives and enemas, with the hope of tiding the patient over the attack and with the recommendation of an operation later on. No doctor of my acquaintance undertakes to treat appendicitis any more, but just as soon as a diagnosis can be made, the attending physician advises and urges an operation at once. The surgeon, therefore, in late years has the patient at an earlier stage than was once the case and I do not understand why this should contribute to an increasing mortality rate.

I have said that no physician now-a-days gives purgatives. There is one notable exception to this rule. One doctor of my acquaintance, who thought himself of some little importance, did take magnesium sulphate and not being satisfied with the first dose, repeated the dose and applied hot stupes. Later in the day he went to the hospital with a ruptured and gangrenous appendix. This goes to prove that any doctor who undertakes to treat himself has a fool for a patient. I shall not mention the gentleman's name.

Although many of our cases of appendicitis go on to rupture and appendiceal abscess and other complications, I have never heard a word of criticism from any surgeon to whom I have referred patients. I would like, however, to call attention to the disadvantages under which we labor and in many cases the obstacles which stand in the way of getting these patients to the hospital. In the first place, we do not have the advantages of the laboratory to make a blood count, nor have all of us been sufficiently trained in the use of the microscope in making satisfactory urinalysis. Then, too, it is not possible for rural physicians to have such close observation of the patient, because of the distance to be traveled, condition of the roads, and press of professional calls. Often it is not possible to see the patient more than once a day. If called within the first hour or two of the onset, it is frequently impossible to make a diagnosis. Only recently, and the patient is just now leaving the hospital, I was called within two hours of the attack. The patient had severe and colicky pains all ove the abdomen, nausea and vomiting, but n definite tenderness and no spasm of muscl over abdomen and normal temperature. Suspecting the appendix, I directed use of the ice-bag and enema and gave a hypodermic to relieve the pain. This was at 8 A. M. I instructed the practical nurse to report in the afternoon. She did not do as directed, but when the pain recurred she gave a hypodermic. The next morning when I called she had a definite case of acute appendicitis and, when operated upon about 2 P. M. of that day, the appendix had leaked, requiring, of course, the drainage tube. A far larger number of these cases rupture before calling a physician.

It is surprising how many cases come to us with ruptured appendices and appendiceal abscesses, which have not even consulted a physician. I recall that of a young girl of 20, who came into my office and said that she came shopping and while in town thought she would see me about her side. Upon examination I found an appendiceal abscess the size of an orange. I recall another case of a man who drove up to my office with his family and said he was going on a visit, but stopped in to get something for his daughter who was suffering with menstrual cramps. I found that she had a temperature of 102 and a definite mass in the abdomen which proved to be an appendiceal abscess.

Typical cases of appendicitis, as everyone knows, are not difficult of diagnosis. A history of one or more similar, though slighter attacks, history of constipation, of being seized with abdominal pains, in a few hours locating in lower right abdomen, nausea and vomiting, with temperature of 100-102, tenderness over the lower right quadrant, with muscular spasms, increased white blood count, negative urine and a normal pelvis, the chances ar you have an acute appendix. Unfortunately all cases are not typical and although all of these symptoms are present, it is well to remember that one might be mistaken. It may be that there is diarrhea instead of constipation. The temperature may be normal. It is not always possible to detect tenderness or muscular spasm and there may not be vomiting, although in my experience nausea is rarely absent.

When once the diagnosis of appendicitis is made, the country doctors are frequently confronted with other problems of getting the patient promptly to a hospital. There is the question of remote cases, of impassable roads, the lack of finances and means of transportation. In 1930 I was called fourteen miles from home and found a boy of 18 with a very acute appendicitis. The last five miles were over roads almost impassable and rain was descending in torrents. There was no one there except the mother and some small children. There was no telephone connection and the father was reported to be in a nearby town. (I learned later that he was almost in sight of the house running off a doublin of moonshine.) There was nothing I could do but postpone removal to a hospital until the following morning. When operated upon he had a ruptured appendix.

It is well to remember that not all cases which have acute abdominal pains with nausea and vomiting and a moderate degree of temperature are cases of appendicitis. The following are unusual or atypical cases:

Mrs. T———., 28 years old, four months pregnant, was taken suddenly ill and with severe abdominal pains, nausea, vomiting and temperature of 100, with a decided mass in the lower right abdomen. I took her to the University of Virginia Hospital. Dr. Goodwin, who examined her, found the mass to be movable. He was uncertain and properly deferred operation. She remained in the hospital two weeks, all symptoms subsided and the mass disappeared. Two weeks later, she had an attack like the first one. I again took her to the University Hospital. Operation was decided upon and what was found was a fibroid tumor attached to the side of the uterus caused by tortion. The tumor was removed, pregnancy was uninterrupted and at term gave birth to a healthy boy.

Mr. B———., aged 22, seized suddenly with pains all over the abdomen, but principally in right part of back, extending to the bladder, nausea and vomiting but no temperature, no tenderness and no spasm. Diagnosis was kidney colic. This was at 9 A. M. At 2 P. M. symptoms returned. This time, upon examination, temperature was 101, marked tenderness over McBurney's point, considerable spasm. Diagnosis—acute appendicitis. He was removed to the University of Virginia Hospital and diagnosis was confirmed, but while preparing the operating room, report of urine showed blood. X-ray was taken and a stone found in ureter just over the appendix.

Mrs. L———., widow, aged 48. Acute attack with violent colicky pains all over the abdomen, profuse diarrhea, vomiting every few minutes, temperature normal, no tenderness, no spasm. I left with an appointment to see her the following morning. I received a message that the patient was so much improved that the visit was not necessary. Six days later, after being up and around for several days, she went visiting and while walking up a hill collapsed. I was called and found a ruptured appendix. She was removed to a hospital in Richmond, was operated upon immediately, but had a general peritonitis and a stormy time for many weeks. Dr. Robins, I think, reported this case at a State Medical Society meeting.

Mr. C———., aged 23. No previous attack, sudden onset, pains all over abdomen, frequent green stools, temperature 100, no tenderness, abdomen prefectly relaxed, no spasm. There was at the time an epidemic of diarrhea in my territory. This condition of things kept up for three days, temperature 100 and 101, still no distention of abdomen, no spasm and little pain. I made a rectal examination, which I should have made sooner and found an appendiceal abscess low down in the pelvis. He was operated upon and made an uneventful recovery.

These are only a small number of abnormal cases which have come under my observation. When one considers the number of these cases which come to the surgeon with all sorts of complications, it is surprising and gratifying to see the great percentage of complete recoveries. This I attribute to the skill, the technique and the after-treatment of the modern surgeon.

In what I have said above, I have only hinted at the trials and tribulations, the problems and perplexities, the disappointments and disillusions of the country doctor.

Success is failure turned inside out,—
The silver tint of the cloud of doubt,
And you can never tell how close you are,
It may be near when it seems afar;
Stick to the fight when you're hardest hit—
It's when things seem worse that you mustn't quit.

—Edgar A. Guest.

XUM

RECENT ADVANCES IN THE TREATMENT OF BURNS.*

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The treatment of burns has undergone a marked change in the past decade. Ten years ago interest was centered primarily in the local lesion, which was treated intensively while the constitutional symptoms, though recognized, were not effectually combated. Moist dressings or ointments were usually applied to the burned area. The large number of preparations and procedures utilized attest the unsatisfactory results. Compresses of bicarbonate of soda, normal salt solution, one-half per cent acetic acid, boric acid, and one per cent aluminum acetate were recommended. Vaseline, zinc oxide, cold cream, and bismuth paste were applied. Patients with recent burns were placed in continuous tubs of warm water or saline. Debridement of the burned areas was recommended, but the additional shock of an operative procedure on an already handicapped subject made this method hazardous in extensive burns. Bancroft reported a mortality of 57 per cent when debridement was done.

The use of Ambrine, a proprietary preparation containing paraffin and oil of amber, and carron oil, consisting of equal parts of linseed oil and lime water, was followed by a slight reduction in the mortality. Picric acid, suggested by Thiery, could not be used over extensive areas without danger of liver damage. The dry heat method of Sneve gave encouraging results, but was not generally accepted. Exsanguination followed by transfusion was occasionally practiced, but presented technical difficulties in infants due to increased viscosity of the blood. Amputations were recommended in extremities which were badly carbonized. The local therapy overshadowed the general treatment, and Underhill's observation, "What does it profit a man if he dresses the wound beautifully and yet loses his patient?" was quite appropriate.

In 1922 Vaccarezza[1] demonstrated by animal experimentation that the toxic symptoms following burns were due to the circulation in the blood of decomposition products from the damaged area. Dorrance and Bransfield[2] in 1922 advocated one-half per cent acetic acid compresses in conjunction with dry heat, which they found superior to other forms of local treatment. Intravenous injections of 1000 c.c. of 5 per cent dextrose were given frequently to prevent concentration of the blood elements.

Underhill[3] in 1923 stressed the significance of anhydremia in extensive burns. He found that a blood concentration of 140 per cent was incompatible with life. Later studies by the same author revealed that a burn involving one-third of the total body area may mean a fluid loss of 6000 or 7000 c.c. a day. He recommended forcing fluids to the extent of 4 to 8 litres a day in severe burns.

Robertson and Boyd[4] (1923) reviewed the theories of the chemical nature of the toxin. This had been variously thought to be a ptomaine, a nucleoprotein rather similar to snake venom, a pyridine base and muscarine. These experimentors burned the skin of rabbits and noted the primary shock, lasting for six or eight hours, followed by severe toxic symptoms during the first week, characterized by drowsiness or excitability, marked elevation of temperature, convulsive twitching, occasional diarrhoea, and hemoglobinuria. The nonprotein nitrogen was elevated about 50 per cent in the majority of cases, due largely to an increase in the urea nitrogen. These symptoms gradually disappeared after two or three weeks. The majority of the deaths occurred during the first five days. These experiments were repeated in burns of the subcutaneous tissue with identical results. Burns limited to the muscle caused toxic symptoms, but the animals recovered. It was found that excision of the burned areas within eight hours following the burn prevented the appearance of toxic symptoms. Later removal did not prevent toxemia. When burned segments of skin were transplanted on unburned animals, toxic symptoms appeared within one hour after the transplantation. It was further demonstrated that the toxin is carried in or absorbed by the red blood cells.

These experiments indicate that the toxin, which contains primary and secondary proteoses, consists of two parts; one part is thermostabile and diffusible, and exerts its action on the nervous system, while the second portion is thermolabile, colloidal, and necrotoxic. This toxin was found to be soluble in water, saline, and alcohol, and to be nonvolatile. Robertson and Boyd were unable to

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demonstrate any antibody formation against the toxin of burns.

Brancati[5] (1924), in a study of the toxemia following burns, decided that death was due to anaphylactic shock from proteins changed by the heat. This was substantiated by Olbrycht's[6] (1924) pathological studies, which showed that an immediate loss of chromaffin substances and lipoids, with low epinephrin content similar to that seen in anaphylactic shock, was a constant finding in the suprarenal gland following burns.

Ravdin and Ferguson[7] (1925) stressed the importance of early treatment in burns, quoting Blumenau's series of 186 cases under 14 years of age in which 43 per cent of the deaths occurred in the first twenty-four hours. They reviewed the theories of death following burns, namely: (1) malfunction of skin, with loss of respiratory and excretory ability; (2) alterations in the vascular system from thrombosis, vasodilatation, etc.; (3) over-stimulation of the nervous system, shock, etc.; (4) changes in the blood from loss of red blood cells, with formation of toxic substances; (5) the recent toxin theory, due to action of heat on the proteins of the skin. They recommended placing the patient in an electric cabinet kept at 100° F.. and compressing the burned areas with one-half per cent novocaine solution, followed by debridement under a general anesthetic as soon as reaction from shock occurred. The excised areas were sprayed with 2 per cent solution of dichloramin-T. Fluids were forced and dextrose was given intravenously if necessary. Magnesium sulphate was given by mouth to prevent renal impairment, and a high carbohydrate diet was thought to spare the liver. Exsanguination and transfusions were resorted to occasionally, 20 c.c. of blood being given for each pound of body weight in children.

In 1925 appeared Davidson's[8] first article upon the local treatment of burns with tannic acid. Basing his work upon the assumption that the toxemia of burns resulted from the absorption of autolytic products of protein decomposition, he endeavored to prevent these products from reaching the circulation. Previous attempts to accomplish this by arresting the autolytic process by mechanical removal, as baths, debridement, and vasoconstrictors, having proved unsatisfactory, Davidson decided on tannic acid because this forms a stable compound with the protein constituents of all body fluids and cells with which it comes in contact. This stable chemical union prevents further chemical, bacterial, or mechanical action. By using a 2.5 or 5 per cent solution the astringent effect is limited to the most superficial layers of tissue and systemic symptoms are avoided. Davidson states that tannic acid is analgesic, and that toxemia is lessened; the local astringent effect prevents the loss of body fluid, secondary infection is markedly limited, and the protective layer of coagulated protein forms a scaffold for the growth of young epithelial cells, with diminution of the subsequent scar.

Bancroft and Rogers[9] (1928) reported a 20 per cent mortality with tannic acid as compared with 40 per cent following the use of picric acid, and 57 per cent following debridement. Wilson[10] (1928) reported 50 burns treated with 2.5 per cent tannic acid compresses, with 7 deaths. Three of this number died from intercurrent infection unrelated to the original burns, giving a burn mortality of only 8 per cent. However, this series did not contain many third degree burns, as only one case necessitated a skin graft. Davidson,[11] in recent articles (1930), quotes Harris, Herzfield, and Backman as having reduced their mortality from 26.6 to 12.0 per cent, 38.0 to 9.0 per cent, and 27.8 to 14.9 per cent, respectively, by the use of tannic acid. Davidson summarizes his results as follows: Before tannic acid was used 25 per cent of the fatal cases died in the first thirty-six hours, i. e., from shock; no deaths resulted during this period after the tannic acid treatment was begun. Thirty-three per cent of the fatal cases formerly died during the next seven days, i. e., from toxemia; 17 per cent now die during this period. The remaining deaths occur late because of exhaustion or some complication. Davidson feels that "the high late mortality is due to life being prolonged in very extensive burns that formerly died early, either from shock or the toxemia of the burns."

Greenwald and Eliasberg[12] (1926) reported two fatal cases of burns showing a marked hypoglycemia, instead of the hyperglycemia usually noted in burns. Following animal experimentation they concluded that the initial shock characterized by hyperactivity of the suprarenals was associated with a high blood sugar content which contra-indicated adrenalin and dextrose administration, while later degen-

erative changes in the suprarenals led to hypoglycemia, with beneficial results following adrenalin and dextrose therapy.

Davidson[13] (1926) stressed the importance of sodium chloride administration because of the lowering of whole blood and plasma chlorides following extensive burns. Pack and Davis[14] (1930) state that almost without exception in extensive burns the sodium chloride values vary inversely with those for the hemoglobin. Davidson feels that a retention of chlorides occurs in burned patients with diminished plasma chlorides and sodium chloride output in the urine, due to increased protein catabolism, which varies in proportion to the extent of the burn. This persists until the slough separates from the burned area.

Pack[15] (1926) reviewed the conditions influencing the prognosis of burns. Scalds are more serious than burns from dry heat. The extent of surface involvement, especially when multiple areas are burned, is of greater importance than the depth. Any burn involving one-tenth of the body area should be considered as being serious. The large body surface in comparison with the body weight in infants and pre-existing debilitating disease in elderly persons increase the seriousness of any burn. Women do not tolerate burns as well as men. Burns cause more severe general symptoms in blonds than in brunettes. Burns involving the genitalia, anterior thoracic walls, and the region supplied by the trigeminal nerve are more serious than in other areas.

Results During the Past Ten Years

A study has been made of the burned cases admitted to the Johns Hopkins Hospital during the past ten years. Only recent burns resulting from dry or moist heat have been included in this series. The majority of the burns resulted from accidents in the home. A relatively small number of industrial burns were treated during this period. The youngest fatally burned patient in this series was an infant one month old; the oldest was 82 years of age. The majority of the patients (57.5 per cent) were under 7 years of age.

Two hundred and nineteen (219) burned patients were admitted to the surgical service of the Johns Hopkins Hospital between January 1, 1921, and January 1, 1931. Seventy-three (73) of these patients died, a mortality of 33.3 per cent. Despite the relatively small number of cases, the yearly mortality remained remarkably constant during the first six years of this series. The lowest mortality in this early group was 38.8 per cent in 1924 and 1925; the highest was 45.4 per cent in 1926. During the past four years the mortality has declined,

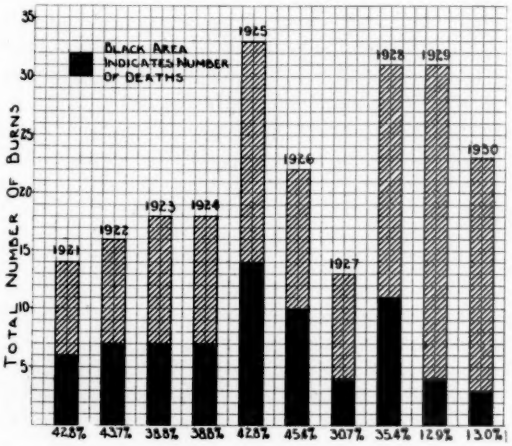

Fig. 1.—Graphic representation of the total number of burns treated annually (1921-1930), and the fatalities during this period. Note the marked reduction in deaths during the past two years.

and in 1929 and 1930, 54 burned patients were treated with only 7 deaths, a mortality of 13.3 per cent.

Method of Treatment

The local and general treatment of burns in this hospital has been similar to that followed elsewhere until quite recently.

In 1921 extensive burns were treated locally with moist applications. Vaseline gauze, boric acid compresses, continuous tubs, or carron oil were used immediately upon admission. Fluids were given by mouth, subcutaneous injection, and rectal drip. Occasionally small amounts of 5 and 10 per cent dextrose were given intravenously. Saline and Dakin compresses were applied as the wounds granulated, with later application of Thiersch or Reverdin grafts. Fourteen (14) cases were treated with 6 deaths, a mortality of 42.8 per cent.

In 1922 the same treatment was followed with the addition of picric acid applications and Ambrine sprays. Sixteen (16) patients were treated with 7 deaths, a mortality of 43.7 per cent.

This treatment was continued in 1923 and 1924, with occasional blood transfusions. Eighteen (18) patients were treated each year,

and 7 died in both series, giving identical mortalities—38.8 per cent for the two years.

All burns were dressed with vaseline gauze or the patients placed in continuous tubs during the first half of 1925. Tannic acid compresses were used in conjunction with dry heat during the latter part of this year. Fluids were forced in the usual manner. Thirty-three (33) patients were treated and 14 died, a mortality of 42.8 per cent.

In 1926, exposure to dry heat alone was used until the granulating surfaces were suitable for skin grafting. Exsanguination followed by transfusion was done in one case. Intravenous injections of dextrose and transfusions were given more frequently than in previous years. Twenty-two (22) patients were treated and 10 died, a mortality of 45.4 per cent.

This treatment was continued in 1927, when 13 patients were admitted with 4 deaths, a mortality of 30.7 per cent.

The treatment was unchanged in 1928 with the exception that one patient received convalescent burn serum. Thirty-one (31) patients were treated with 11 deaths, a mortality of 35.4 per cent.

In 1929, W. M. Firor[16] made bacteriological studies of the burned areas after treatment with various antiseptics and coagulants. Following extensive studies, he found that a 2 per cent aqueous solution of gentian violet applied at frequent intervals coagulated the burned tissues in a few hours, formed a firm eschar, and markedly inhibited the growth of organisms. Fluids were forced orally, subcutaneously, by rectum, and intravenously. When difficulty was had in keeping the fluid intake at a sufficiently highly level, 5 per cent dextrose or normal salt solution was given continuously through a cannula inserted in a vein. In this manner, the desired amount of fluid could be given continuously over a long period of time if necessary. This method has been followed for the past two years with a most encouraging reduction in the mortality. In 1929, 31 burned patients were admitted, with only 4 deaths, a mortality of 12.9 per cent, and, in 1930, 23 burns resulted in 3 deaths, a mortality of 13.0 per cent.

The following routine is now carried out with all extensive burns. The patient is given an adequate dose of morphia, and shock, if present, is treated by the usual measures. The clothing is cut away, and the patient is wrapped in sterile sheets. Fifteen hundred units of tetanus antitoxin is given and the patient is admitted to the ward, where he is placed on sterile sheets beneath a light frame. By means of electric lights the temperature is kept at 100° F. A 2 per cent aqueous solution of gentian violet is sprayed over the burned area every hour until a firm eschar is formed. The crust is then sprayed every eight hours to prevent secondary infection. The fluid intake is kept between 4000 and 6000 c.c., depending upon the extent of the burn and the size of the patient. Frequent determinations of the hemoglobin are made, and transfusions of citrated blood are given as indicated. Compresses of normal salt solution are begun over a small area after ten days or two weeks and are gradually extended to the entire burn. The crust softens and separates, revealing an epithelialized surface in second degree burns, or a granulating area in third degree burns. Exuberant granulations are inhibited with Dakin solution compresses, or are trimmed away with the scalpel. Small deep grafts are placed over the flexor surfaces to prevent early contractures, and the entire surface is grafted as soon as possible.

DEATHS 1921-1931

Year	Deaths	Within 36 Hours	From 2-8 Days	After 8 Days	Average Duration Life
1921	6	2-33%	1-17%	3-50%	10 days
1922	7	2-28%	3-44%	2-28%	6 days
1923	7	3-44%	2-28%	2-28%	10 days
1924	7	4-58%	2-28%	1-14%	3 days
1925	14	8-57%	5-36%	1- 7%	3 days
1926	10	5-50%	2-20%	3-30%	7 days
1927	4	2-50%	1-25%	1-25%	4 days
1928	11	6-55%	1- 9%	4-36%	11 days
1929	4	2-50%	1-25%	1-25%	12 days
1930	3	0- 0%	1-33%	2-67%	22 days
1931	4	1-25%	0- 0%	3-75%	51 days

Fig. 2.—Table indicating the actual number and percentage of deaths occurring during the three time intervals and the average duration of life in fatally burned patients (1921-1931). Note the high percentage of late deaths and the prolonged duration of life during the past two years.

While a study of the annual mortality from burns indicates the progress which has been made in recent years (see Table 1), a detailed study of the time and cause of each fatality is more instructive by indicating further reductions in mortality which may be made in the future.

Deaths from burns are usually divided into three groups. Fatalities occurring during the first twenty-four or thirty-six hours result from shock rather than toxemia, which causes death during the following six or eight days. De-

layed fatalities after the first week result from infection or exhaustion.

Analysis of Results

Seventy-seven (77) burned patients have died since January 1, 1921. (This includes four deaths which have occurred during the first nine months of 1931).

Thirty-five (35), or 45.4 per cent, died during the first thirty-six hours. Nineteen (19) or 24.6 per cent, died during the following week, and twenty-three, or 29.9 per cent, died at some later time. With the exception of 1921, when three patients died during the third period, the late mortality during the first nine years of this series was quite low. The majority of the patients died during the first week, and most of these fatalities occurred during the first thirty-six hours. In 1925, fourteen deaths resulted from burns. Eight (8) of these deaths occurred during the first thirty-six hours, five during the ensuing six days, and only one fatally burned patient survived the first week. In the fatal cases the average duration of life varied from three days in 1924 and 1925 to twelve days in 1929.

In 1930 a distinct change was noted. No deaths occurred during the first thirty-six hours; only one patient died during the first week; and the two remaining fatalities occurred on the twenty-eighth and thirty-third day. The average duration of life was twenty-two days. This continued during 1931. One patient died during the first thirty-six hours; no deaths occurred during the ensuing week, and three patients died 29, 32, and 144 days after admission. The average duration of life for 1931 was fifty-one days. (See Figures 2 and 3).

The prevention of early deaths in extensively burned patients by the present methods of treatment has increased the difficulties encountered during the later treatment, in that children now survive the first week with large third degree burns which would have resulted in an early fatality a few years ago. These patients, already debilitated from the initial period of shock and toxemia, with diminishing hemoglobin values and unstable digestive systems, now face a long and hazardous convalescence. Infections beneath the eschar must be recognized and immediately treated. Intercurrent infections are most serious, and otitis media, mastoiditis, furunculosis, osteomyelitis, suppurative arthritis, and pneumonia must be carefully guarded against. The prevention of pressure ulcers is difficult but essential. Contractures are more liable to occur with the present treatment, as involved traction apparatus is irksome to ill patients, and technical difficulties are encountered in restraining extremities which are entirely denuded of epithelium. In very extensive burns it is sometimes necessary to take several sets of grafts from the same unburned area, which prolongs this period of treatment.

A recent case illustrates the late complications which may arise.

E. W. (U-34,393), a white boy, five years of age, was admitted to Johns Hopkins Hospital on December 3, 1930, after receiving a second and third degree burn of the legs, thighs, buttocks, and genitalia, due to the clothing becoming ignited from an open fire. Practically the entire circumference of both lower extremities was burned from the ankles to the anterior superior iliac spines. He was moderately shocked upon admission to the ward, but reacted well, and was placed beneath a light

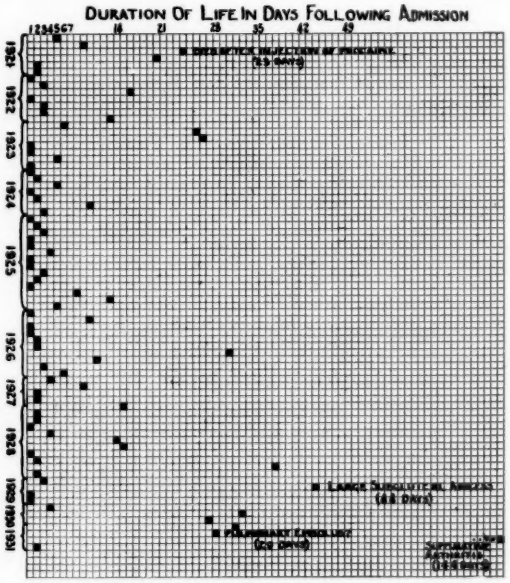

Fig. 3.—Graphic representation of the duration of life in fatally burned patients. During the past few years patients who survived the first twenty-four or forty-eight hours have died relatively late of some intercurrent infection or complication. Note the absence of deaths during the latter part of the first, the second, and third weeks in the recent cases.

frame. A 2 per cent aqueous solution of gentian violet was sprayed over the burned area every two hours, and small amounts of mor-

phia were given. Urinalysis on December 4th showed many red blood cells, granular casts, and 2 plus albumen. On December 5th, the non-protein nitrogen was 60. This acute nephritis, an unusual complication in this series of cases, rapidly subsided and the urinary findings and the blood chemistry became normal within a few days. The fluid intake was kept above 3,000 c.c. a day, and the patient did quite well during the first week. His temperature did not rise above 103° (rectally). The patient was very uncooperative, voiding and defecating on the burned area, which rapidly softened the eschar over the buttocks and perineum, with considerable secondary infection in this region. The child developed a definite psychosis, refused to speak, and kept his head continually covered by the bedclothes. Saline compresses were slowly extended over the legs and thighs with marked temperature rise as each area was softened. The hemoglobin gradually fell to 52 per cent on December 29th, and a transfusion of 300 c.c. of citrated blood was given. This was repeated on January 9th. On January 13th he was suspended from a Balkan frame by a sling to prevent pressure ulcers, and adhesive traction was applied to the ankles to prevent contractures of the knees. A third transfusion was given on March 8th. On March 16th about 100 small deep grafts were placed on the right leg. His condition was so unsatisfactory that only a small area was grafted at this time. On March 30th an early posterior dislocation of the right tibia was noticed and additional weights were added to the traction in order to overcome this. The patient repeatedly tore the adhesive off, and the traction proved unsatisfactory because of the small area of normal skin available. A Steinman pin was inserted through the os calcis on April 15th. At this time it was found that the joint capsule was open and a suppurative arthritis had developed. The patient gradually became weaker, his pulse became more rapid, and he died on April 25th, 144 days after admission.

Summary

A study has been made of 219 burned patients admitted to the surgical service of the Johns Hopkins Hospital during the past ten years.

Seventy-three, or 33.3 per cent, of these patients died as a result of the burns.

During the first eight years of this series, 165 burned patients were admitted, with 66 deaths, a mortality of 40.0 per cent.

During the past two years, 54 patients were admitted and seven died, a mortality of 12.9 per cent.

The average duration of life following admission to the hospital in fatal cases for the first eight years of this series was 6.7 days.

In 1929 the average duration of life was 12 days. In 1930 this was increased to 22 days, and during the first nine months of 1931 it was 51 days.

Conclusions

The mortality from burns has been greatly reduced during the past few years by the use of tannic acid and gentian violet sprays. These remedies coagulate the burned proteins and prevent the absorption of toxic products by the circulating blood.

A realization of the importance of preventing concentration of the blood elements by increased fluid intake has also contributed to the reduction in mortality. By the prevention of toxemia the most striking reduction in mortality is now had during the first week following the burn. The majority of the deaths formerly occurred during this period.

The large number of badly burned patients who now survive the early period add additional hazards to the late treatment. Careful nursing, constant attention to posture in order to prevent contractures, and the avoidance of secondary infection are essential.

Only by the prevention of late complications can we hope to bring about a further reduction in the mortality at the present time.

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THE TREATMENT OF ACUTE ARSENIC POISONING.*

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The extensive use of arsenic preparations in the various industries, as a parasiticide, as an agent for the destruction of rodents and other pests, and frequently as a therapeutic agent, makes the incidences of acute arsenic poisoning a relatively common occurrence. It is not rare for serious or even fatal poisoning to occur in rural sections as a result of the indiscriminate and careless use of arsenical sprays. The cause of the intoxications is often traced to the employment of apparently empty arsenic containers for the storage of food products; but regardless of the source of poisoning, the early recognition and treatment of suspected cases is of the most vital importance to the clinician.

In acute arsenic poisoning almost every therapeutic agent of any supposed or theoretical value has been employed. The results of such treatment have led to rather conflicting statements on the part of many investigators, and the continued employment of certain arsenic antidotes in acute intoxication is more the result of empiricism, than of any proven effectiveness as judged from carefully controlled experiments. The mere fact that a patient recovers from arsenic poisoning following a certain treatment is no indication of the value of such a procedure, and no justification for the assumptions often made. A study of the literature reveals numerous cases of arsenic poisoning in which the patient recovered following the administration of some antidote; a single case observed; no control of any type; and the statement unreservedly made that the supposed antidote is of inestimable value in all forms of heavy metal poisoning.

Semon[1] (1924) treated one case of arsenical jaundice with daily injections of sodium thiosulphate .45 to .5 gm. for nine days, and the patient recovered. He states that mild cases of arsenical jaundice clear up without any medication other than small doses of calomel, yet he concludes the sodium thiosulphate is of real value in counteracting the serious effects of acute arsenical toxemia, and an indispensable adjunct in all cases of acute metallic poisoning. He presents nothing to show that he had ever given the antidote a trial in any other form of metallic intoxication.

The value of sodium thiosuphate as an antidote of arsenic poisoning was first suggested by Ravaut,[2] but renewed interest in its therapeutic value is largely due to the papers of Dennie and McBride,[3] who state that it is a highly efficient and rapid neutralizing agent for all common metallic poisons: arsenic, mercury, lead and bismuth. Haskell and associates[4] have presented experimental evidence to show that sodium thiosulphate is absolutely worthless in the treatment of poisoning produced in dogs by the oral administration of mercuric chloride, although the antidote was administered much more promptly after the poison than would ever be the case clinically.

Experiments conducted in our own laboratories[5] on the value of sodium thiosulphate in acute arsenic poisoning have convinced us that the compound possesses no virtues whatever in acute intoxication. The mortality rate of dogs receiving .5 c.c. of 1 per cent potassium arsenite (Fowler's solution) per kgm. orally was 46.1 per cent; the mortality rate of a series of animals receiving this dose of arsenic and in addition sodium thiosulphate immediately afterward was also about 46 per cent. On the other hand, dogs receiving .75 c.c. or more of Fowler's solution all died whether treated or untreated. The intravenous use of sodium

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thiosulphate in dogs poisoned by the oral administration of .5 c.c. Fowler's solution raised the mortality rate from 46 per cent to 100 per cent, and would suggest that the antidote may actually lessen the chances of recovery. We hesitate, however, to make this statement, but feel that where recovery takes place following sodium thiosulphate therapy, it does so in spite of the antidote, and not as a result.

More recent investigations of Hesse[6] reveal that a new and unrelated sulphur compound, sodium hydrosulphite, of the formula $Na_2S_2O_4$, possesses definite value in the treatment of mercuric chloride poisoning. The validity of Hesse's observations have been attested to some extent in our laboratory by Haskell, who found that if sodium hydrosulphite be given immediately following the oral administration of a fatal dose of mercuric chloride, it will, in the majority of instances, save the animal.

The apparently encouraging results obtained by the use of this drug in mercuric chloride poisoning prompted us to carry out an investigation as to its value in acute arsenical poisoning.[7] All experiments were performed on

TABLE I[7]

Results Following the Immediate Use of Sodium Hydrosulphite in Poisoning from the Oral Administration of Potassium Arsenic Solution

Weight of Dog. Kg.	Solution of Potassium Arsenite-U. S. P., Cc. per Kg.	Sodium Hydrosulphite, Mg. per Kg.	Results
10.1	1	100	Survived*
7.27	1	0	Died 8 hours
5.0	1	100	Survived*
6.6	1	0	Died 9 hours

*If animal was living at the end of two weeks, it was reported as survived.

apparently healthy dogs, following a twenty-four hour period of starvation, so that the presence of food would not interfere with absorption of the arsenic preparation. To prevent vomiting, 10 mgm. of morphine sulphate per kgm. of body weight was injected subcutaneously, and followed in one-half hour by the oral administration of the poison. As a source of arsenic we employed solution of potassium arsenite U. S. P. (Fowler's solution), which was administered from a pipette into a funnel connected with a stomach tube, and rinsed down in 25 c.c. of tap water. The mortality of a series of thirteen dogs given .50 c.c. per kgm. was 46.1 per cent, and that of twenty-four dogs given .75 c.c. per kgm. 100 per cent.

In all animals treated with sodium hydrosulphite, .75 to 1 c.c. per kgm. doses of Fowler's solution were employed. The antidote, 100 mgm. per kgm. in 10 per cent solution was

TABLE II[7]

Results Following the Use of Sodium Hydrosulphite in the Treatment of Dogs Poisoned by the Oral Administration of Potassium Arsenite Solution

Weight Kg.	Arsenic Solution, Cc. per Kg.	Sodium Hydrosulphite, Mg. per Kg.	Time Interval in Minutes	Result 24 Hours
12.2	1	None	--	Dead
12.4	1	None	--	Dead
10.8	1	None	--	Dead
4.37	1	None	--	Dead
14.0	1	100	30	Dead
13.5	1	100	30	Dead
5.0	1	100	30	Dead
3.45	1	100	30	Dead
4.8	1	100	4.75	6 Days
5.1	1	100	4.25	Survived
15.8	1	100	3	Survived
3.75	1	100	3	Survived
10.3	1	100	10	Dead
11.7	1	100	10	Dead
13.7	1	100	10	Dead
11.4	1	100	9.25	Dead

given immediately afterwards and rinsed down with 25 c.c. of normal hydrochloric acid. The results are shown in Table I, and indicate that

TABLE III[7]

Results Following the Use of Sodium Hydrosulphite in the Treatment of Poisoning from the Oral Administration of Potassium Arsenite Solution—U. S. P., 0.75 Cc. per Kilogram of Body Weight (Dogs)

Weight Kg.	Arsenic Solution, Cc. per Kg.	Sodium Hydrosulphite, Mg. per Kg.	Time Interval in Minutes	Results
4.0	0.75	None	--	Died 48 hours
3.86	0.75	None	--	Died 8 hours
3.8	0.75	None	--	Died 24 hours
6 05	0.75	None	--	Died 24 hours
8.9	0.75	None	--	Died 24 hours
10.9	0.75	None	--	Died 24 hours
14.6	0.75	None	--	Died 24 hours
18.7	0.75	None	--	Died 24 hours
5.7	0.75	100	5	Died 36 hours
6.1	0.75	100	5.75	Survived
13.05	0.75	100	6	Survived
10.3	0.75	100	6	Survived
8.07	0.75	100	6	Survived
8.7	0.75	100	6	Survived
8.5	0.75	100	10	Survived
8.4	0.75	100	10	Survived
6.9	0.75	100	10	Survived
8.3	0.75	100	10	Survived
8.08	0.75	100	10	Survived
7.7	0.75	100	15	Died 24 hours
7 9	0.75	100	15	Survived
8.5	0.75	100	16	Died 24 hours
5.3	0 75	100	16	Died 24 hours
3.66	0.75	100	20	Died 48 hours
4.1	0.75	100	20	Died 24 hours
6.7	0.75	100	11	Survived

the compound possesses definite value if administered immediately following the oral administration of a fatal dose of potassium ar-

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senite. In all experiments, control and treated animals were run simultaneously.

In clinical cases of arsenic poisoning, considerable time often elapses before the case comes under observation. It was of interest, therefore, to determine what effect delayed treatment would have on the mortality rate of dogs poisoned with a fatal dose of arsenic. The results shown in Tables II, III, and V indicate the necessity of early treatment, for the antidote is ineffective after the lapse of fifteen minutes. It further indicates the rapidity with which arsenic preparations are absorbed from the gastro-intestinal tract. The time interval of effective treatment will vary considerably, depending upon the amount of arsenic taken, its concentration, and the amount of food present in the stomach at the time. While it is often difficult to secure experimental evidence to justify certain conclusions, it is believed that sodium hydrosulphite possesses a definite beneficial action in preventing the serious intoxication resulting from sublethal doses of potassium arsenite, and the time interval of effective treatment would be considerably prolonged with weaker concentrations of arsenic, and by the presence of food in the stomach.

The antidote itself is of low toxicity. Dogs recover from the oral administration of 1 gm. per kgm. Gross and histological studies on animals which have received large doses of sodium hydrosulphite reveal no pathological changes.

MORTALITY TABLE IV

No. of Animals	Potassium Arsenite 1% cc. per Kgm.	Sodium Thiosulphate mgm. per Kgm.	Mortality
13	0.50	--------	46.1%
6	0.75	--------	100. %
13	1.00	--------	100. %
6	0.50	100 to 200 Vein	100. %
14	0.50	500 mgm. orally	46. %
6	1.00	100 to 1,000 Vein	100. %

MORTALITY TABLE V
(Orally)

No. of Animals	Potassium Arsenite 1% cc. per Kgm.	Sodium Thiosulphate 100 mgm. per Kgm.	Mortality
12	1.00	--------	100 %
8	1.00	Immediate	0. %
4	1.00	5 min.	25. %
6	1.00	30 min. to 1 hr.	84. %
8	1.00	10 to 30 min.	100. %
8	0.75	--------	100. %
12	0.75	5 to 11 min.	8.3%
7	0.75	11 to 15 min.	71.4%

We feel that the compound deserves a trial in suspected cases of acute arsenical poisoning.

SUMMARY

Whatever might be the virtues of sodium thiosulphate in arsenical dermatitis, subacute or chronic arsenic poisoning, there seems to be little doubt that it is valueless against the poisoning produced by the oral administration of potassium arsenite.

Sodium hydrosulphite, however, appears to be of definite value, if given within a short time after the ingestion of a fatal dose of arsenic. The use of sodium hydrosulphite in acute arsenic poisoning is not recommended as a measure intended to supplant gastric lavage, the importance of which is unquestioned in poisoning from any orally administered drug. As an adjunct to the latter, however, the compound may prove quite effective, particularly in those cases in which the presence of food in the stomach might embarrass the progress of lavage. The immediate administration of appropriate amounts of sodium hydrosulphite may serve to fix or render unabsorbable the arsenic until thorough lavage can be effected, if not to be solely responsible for the patient's recovery.

We wish to emphasize the danger of drawing conclusions as to the value of a supposed antidote solely from clinical observation when many other factors may be concerned in bringing about recovery of the patient. While the antidotes themselves may do no harm, too much enthusiasm in their use often leads to neglect of other more rational therapeutic procedures.

The author wishes to thank Mr. J. H. Meadow and Mr. J. T. O'Neal for their services in carrying out some of the experiments incident to this investigation.

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THE BLOOD TRANSFUSION.*

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The transfusion of today, with its modern methods permanently established by Crile, since more or less perfected by Lindeman, Lewishon and Unger, can only excite wonder and a certain degree of admiration for the courage and skill of our forebears, who, in total ignorance of aseptic methods and working with inferior instruments, were able to accomplish some results.

We must respect the foresight of those who attempted to save the life of Pope Innocent, the Eighth, in 1492; of Jean Baptiste Denney's transfusion of man with sheep's blood in 1667; Blundell's experimental work on dogs, using the syringe principle, 150 years later, in 1818,—nor would we be just did we fail to express our appreciation of Bishoff in his use of defibrinated blood in 1835.

Deficiencies in their knowledge may have been responsible for their courage as well as their failures, and, at the end of an unsuccessful period, transfusion was stamped as a dangerous operation, eliminating it from practical therapeutics until some future generation's interest in it would again be revived, and success, failure and condemnation would again be repeated.

Landsteiner and Shattock, working independently in 1900, demonstrated the presence of isoagglutins in serum and isoagglutinogens in the red blood cells. 1901 saw Landsteiner's three blood groups, immediately followed by Decostello, Sterile, and Heckton's confirmation with addition now known as group four. Crile's epoch making work in 1906 placed us in a pathway of light, immediately to be further illuminated by Jansky and Moss' practical classification of the present four groups.

Huston and Lewishon in 1914 demonstrated sodium citrates combining power with blood calcium (the most component element in blood clotting) forming double soluble salt, rendering the calcium inert. Although nontoxic in a dilution that was still effective certainly was another great forward step, and the first transfusion with citrated blood by Agote, of Buenos Aires, this same year marked the beginning of the present state of the operation.

That sodium citrate renders the corpuscles more fragile, diminishes the complement of the donors serum, reduces the opsonic index as suggested by Drinker and Brittingham, later commented upon by Colebrook and Storer, certainly has not met with sufficient proof to place the citrate transfusion in bad repute. Just as Unger has insisted that the phagocytic power of the leukocytes is diminished, the latter I hope to show is without foundation later in this paper. So much for history.

May I now briefly discuss methods, selection of donors, including blood typing; indications; amount of blood to be transfused; reactions, immediate and delayed; complications and the life of the transfused corpuscle.

I shall not burden you with a lengthy discussion of methods. The three commonly in use are familiar to us all; the Kempton Brown, direct, and citrate. When reference to direct transfusion is made, only one is considered, that in which the blood is withdrawn from the donor's vein and injected into the recipient's vein by means of the numerous transfusion outfits on the market at this time. The patient and donor are lying in close proximity to one another. When used by operators familiar with them, little can be said of the value of one over the other. Each has its following, and justly so. The citrate method, I believe, is preferred where the host has a blood stream infection, as it does not subject the donor to unnecessary risk. From the standpoint of reactions, Pemberton's, Drinker's and Brittingham's analysis of the percentage and the degree; 66.6 in the direct, and 66.4 in the citrate, likewise noting no difference in the severity, it seems a matter of adopting the procedure one is most familiar with. In the Crile Clinic, where the Kempton Brown method is used exclusively, I was unable to obtain this information, yet, as it requires a trained personnel, it certainly is not practical for the average one of us.

Indications:

1. Sudden loss of blood from any cause.
2. Prevention of surgical shock, pre- or post-operative, that is related to hemorrhage, acute or chronic.
3. Chronic hemorrhagic conditions.
4. A pre- or post-operative condition where the bleeding and clotting time has been found delayed.
5. Blood dyscrasias, pernicious anemia, leukemia, secondary anemia.
6. Sub-acute bacterial infection.
7. Acute septic condition.
8. Typhoid with hemorrhage.

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9. Streptococcic and staphylococcic infection of blood stream.

10. Angina pectoris resulting from low blood presure secondary to anemia.

11. Illuminating gas poison.

Feinblatt recognizes the following additions, as pellagra, nephritis, eclampsia, tropical sprue, marasmus and intestinal intoxication in infants, while Mosenthal and Ashe have published excellent results from transfusions in Bright's disease with anemia.

In the first four groups large transfusions are indicated of 500 c.c. or more, as the object is to increase blood volume and oxygen carrying power in the red blood cells. However, an exception may be noted in this as in group one where hemorrhage is from duodenal or gastric ulcer. Transfusion under these conditions should be small. Not over 300 c.c. should be used as the elevation of blood pressure following the transfusion is apt to promote more bleeding rather than control it. In the last group the transfusion should be limited to 300 c.c. and given at four day intervals. I will discuss this in more detail later in the paper.

Selection of donors and blood typing: As so well spoken by Loyed, donors should be male between the age of twenty and thirty years, with a normal blood pressure, free of disease and not subject to syncope. Too much emphasis cannot be laid on grouping and cross matching, particularly the latter, before each transfusion. No donor should be used within six months for the same recipient. One has only to familiarize one's self with the literature, which has now become rather voluminous, to respect the dangers attended and the fatal outcomes where dependence was placed in the grouping alone, and now I find no better place to condemn the much spoken of "Universal Donor." It does not exist. When one sees reports of ten deaths reported by use of the universal donor in the past two years, and probably many more which for some reason or other have never been published, is not skepticism justified? Levine and Maybee called our attention to this ten years ago; Freeman and Whitehurst shortly afterward. Butka has recently reported a fatality. Parr and Krischner, using of the universal donor, although cross matching revealed no agglutination on either side, had a resulting death of the recipient in just a few hours—presenting every symptom of receiving incompatible blood. Did Pemberton have this in mind also when he advised against the use of the professional donor, as they are usually universal, on account of the wide incidence of syphilis found in them?

Although frequently overlooked, we must not forget the possibility of transmission of malaria. Ernst Flaum has recently reported such an accident, while Oehlecker goes so far as to reject any donor that has been in a malaria infected country within a period of ten years if it is possible to obtain another suitable one.

What are some of the causes of reactions? Would it not be well to divide them into two classes: first, those resulting from a dull needle which breaks down portions of the venous wall, setting adrift small particles of tissue which may manifest itself in the form of small embolus or a foreign protein. Certain types of rubber tubing have been held responsible by Bushman and Stokes. The latter reaction can be avoided by boiling the tubing in 18 per cent sodium hydroxide before it is sterilized for the transfusion. Cold blood certainly has to be considered. This very frequently happens in the citrate method where the operator is poorly equipped and considerable time elapses before the transfusion is completed; likewise, the blood usually comes in for a great deal of handling with unnecessary exposure to air. Although these reactions are not severe, I mention them not so much from the danger associated with them as the discomfort they produce to the recipient.

It is the anaphylactic or albūminoid reaction that is of so much interest and importance. That our knowledge is limited as to the fundamental principles entering into this type of reaction cannot be denied, yet there are certain principles involved with which we are familiar, and I want to discuss them at this time. Ottenberg and Lidman called attention years ago to the frequency of the post-transfusion reaction following second or subsequent use of a given donor to a given host. Meleney, Fortune, Ferry and Stearns concluded that the subsequent donation of blood by a given donor to a given recipient tends to increase the frequency of reactions in direct proportion to the number of transfusions, while McClure and Doan, in a most excellent monograph covering a large series of transfusions, find it very difficult to obtain a satisfactory donor for those cases that have received a large number of

transfusions. Is it that the recipient develops a new agglutinative sera and hemolytic power to the donors cells, as suggested by Minot and Lee, which Thalhimer felt that he was able to prove later in his warning against the use of the same donor more than once; and does not Babcock's observations and conclusions that isohemolysin and isohemoagglutinin properties developed in the recipient as the result of the donor's blood bear out McClure's and Doan's statement? One might ask why isohemolysis should enter into the practical application of blood grouping as isoagglutination practically always precedes it. Yet when we see cross agglutinations, which appear perfect, followed by severe reactions, one wonders at Kolmer's statement that isohemolysins may occur in seras which do not contain isoagglutinins, as in carcinoma, where the serum of the patient may be hemolytic and result in intravascular hemolysis despite the most careful and apparently satisfactory preliminary tests. That sera of a low titer strength has entered largely into the cause of error where grouping was depended upon cannot be questioned, and Paul Morville, in his most excellent contribution to this phase of transfusion, has definitely proved that sera agglutinative powers varied inversely with its age, although kept in air tight containers with a preservative. Fresh sera will agglutinate 1:32, while one that has been kept over a period of weeks or months may be as much as 1:132. Naturally the length of time required to produce agglutination varies in proportion.

All of us have given large transfusions which were followed by a severe reaction, and three or four days later find that, instead of help to the anemia, we have both a relative decrease in the red cell count and the hemoglobin. In other words, we have made the condition worse by trying to improve it. The writer has never experienced favorable results following severe reactions accompanied by chills and marked increase in temperature. That incompatible blood is the responsible factor cannot be doubted, although we may classify it as anaphylactic shock or an albuminoid reaction, yet the chill and temperature resulting from the liberation of hemoglobin is not unlike the chill produced by malaria, while further injury may be incurred through the dissolved foreign blood albumin resulting from the disintegration of the erythrocytes. The ability of the kidneys to respond to this emergency and carry off the foreign products of decomposition enters largely into the anuria, possibly the gravest complication, which I will refer to shortly.

We are indebted to Erich Hempel for his description of symptoms dependent upon the areas involved, as the feeling of oppression and difficult breathing, cyanosis, accelerated respiration, which may be explained by the consequence of obstruction in the lesser circulation, or to obstruction of the pulmonary capillaries with masses of red cells and their stroma, or by pale or hyaline thrombi as the increase volume of erythrocytes is attributable to hemolysis. Lumbago is due to emboli of the renal capillaries, while renal emboli with infarct formation lead to various urinary phenomena —albumin, cylinders, erythrocytes, displacement of the uriniferous tubules. Oxygen carriers are necessarily lost by hemolysis while hemoglobinemia with icterus and hemoglobinuria appear as the result of hemolysis and agglutination. The whole complex of the observed disturbance points to the vegetative nervous system, especially the sympatheticus. Unlike the action of adrenalin, producing palpitation of the heart, increased blood pressure, paleness, uneasiness, increased respiration due to exclusive action on the peripheral nerve endings of the sympatheticus, the albuminoid products of decomposition appear to affect the mid-brain, the thalamus opticus and the central gray matter of the third ventrical, where the large basal ganglia are located.

Weak stimulation by these products produces irritation, while stronger stimulation leads to paralysis. The dominant phenomena are those of the vasomotor centers in the corpus hypothalamicum. The various arresting and exciting influences proceed from here to the vessels. Here is the cause of paleness, increased blood pressure and headache in mild cases, and cyanosis and lowered blood pressure in severe ones. A rise and fall in temperature is a sign of involvement of the sympathetic heat regulating center in the tuber cinereum; sweating results from stimulation of the secretory center in the hypothalamus. Chilling and rigor are due to the effect on the pilomotor center and the vasoconstrictor center, while excitement of the vagus may be due to the mid-brain.

The effect of transfusion on the bone marrow, stimulating the erythrogenic center with a corresponding increase in the red blood count, rather than from the volume of blood received,

is clearly demonstrated in this case. A case of interstitial nephritis, which had existed over a period of years, and had left a pyonephritis which necessitated the removal of the kidney, came under my observation. As the result of the infection she had developed a severe secondary anemia. Hg. 20, red cells 1,800,000, and a systolic pressure of 190, with a general edema and myocardial failure, was noted. Her condition became progressive, although she was treated vigorously along the line so familiar to all in these cases. Realizing the grave effect of anemia on the heart muscle, as suggested by Paul White and Doushong, and noting the results obtained in Bright's disease by Mosenthal, Ashe, Epstein and Clausen, transfusion was turned to as a last resort. The patient, a woman 44 years of age, was admitted to the hospital with a systolic pressure of 190, diastolic 120. She was extremely nervous and was given ¼ morphia before the transfusion was started. She received 300 c.c. of citrated blood with no evidence of reaction during the procedure. Twenty minutes afterwards she complained of a severe headache; pulse bounding in character; B. P. 290/210. Within the next hour she showed evidence of right-sided dilatation, and 300 c.c. of very dark blood was removed. It was followed by a drop in B. P. to 160/100, and two hours later her pressure was 140/80. She passed an uneventful night, requesting breakfast the next morning. The day was uneventful. Blood chemistry NPN 185, urea 79, creatin 5.9. Urine loaded with albumin and casts; out-put 14 ounces. The next day was followed by another rise in pressure to 240, and 400 c.c. more blood was removed; this was not near so dark as that of the night before. She lingered until the seventh day and died of anuria and cerebral edema.

I wish to call your attention to the blood picture. Third day after transfusion, red cells 2,350,000; Hg. 28 per cent; fifth day red cells 3,200,000; Hg. 42 per cent. Blood was removed both from the vein and finger for counting in each case. That transfusion hastened the outcome in this case cannot be denied. She died of a tubular nephritis. Was this a reaction resulting from typing? It certainly did not present the physical signs of it, as there was only one degree rise of temperature, nor was there a chill. Substernal pain was present, which was explained by dilatation of the right heart. Yet it does not coincide with Mosenthal and Ashe in their statement that these cases presented no evidence of pressure changes after receiving as much as 500 c.c. of blood. Yet the kidney changes—that of a tubular nephritis with hemoglobin infarction—certainly suggest that all was not compatible between the recipient's and the donor's blood. Yet this is exploded by the usual drop in red count and Hg. where anaphylactic reactions occur. Although 700 c.c. of blood was removed, we have evidence that there was a marked stimulating effect on the bone marrow from the above blood picture, as her total red count was nearly doubled, also the Hg., within four days, although twice as much blood was removed as she received.

That transfusion offers more in the treatment of blood stream infections than any other therapy we have to offer at this time cannot be denied. When one sees three cases of streptococcus hemolyticus septicemia in which the organism was isolated on many different occasions from the blood stream, each individual case manifesting all the physical findings and symptoms, as chill, temperature, leucocytosis, respond with negative blood culture, normal temperature, and leave the hospital with a normal blood picture except the anemia resulting from this condition, and after two years are in normal health, are we not justified in feeling that the transfusion gives hope to what a few years ago was a hopeless condition? It was extremely interesting to note the temperature and leucocyte curve in these three cases. Following each transfusion there was a mild chill, with rise in temperature averaging two degrees. The following day the temperature was normal in the morning, with rise in the afternoon, but not over two degrees. On the second and third days the temperature curve increased, to again return to normal after the transfusion on the fourth day. This continued throughout the illness, becoming less after each administration of blood, until the temperature became normal, and, after ten days with no return, these patients were permitted to leave the hospital as they were free of symptoms and the cultures negative.

What was the blood picture? Each case was attended by a rise in the leucocyte count until it averaged 20,000, while the polynuclear count gradually fell from an average of 92 per cent to 80 per cent; afterward the total and differential count assumed a normal picture. There was little increase in the red cells and

hemoglobin until after the third transfusion, when a gradual rise was noted. However, neither patient assumed a normal red count and hemoglobin under six months, and one required twelve months.

Is it not correct to assume from such observations that the leucocytes still maintain their phagocytic powers although exposed to sodium citrate? That the latter has any germicidal properties has been clearly demonstrated by the writer, in treating the streptococcus and staphylococcus to concentrated solutions of this salt without any inhibition of growth whatever. Do the donor's cells possess phagocytic ability, or is the stimulation of the host's granular myocytic center a point that calls for further investigation.

Those of us who have had a bit of experience in transfusion have undoubtedly been disappointed in the results obtained following the use of large quantities of blood in pernicious anemia, myelogenous leukemia, and aplastic anemias, and cases of purpura hemorrhagica. After failing to gain any benefit from a transfusion of over 450 c.c. I resorted to the smaller —not over 300 c.c.—given at four day intervals, and some results were obtained. It was difficult to offer an explanation of this. However, Carl Riech's excellent thesis on the use of the reticulocyte count in a similar manner to Robertson, Krumbhaar and Chanutin as an index to bone marrow activity, found that after the large transfusion they were diminished and these patients did badly. Vogel and McCurdy likewise experienced similar results. I cannot do better than to quote Riech's conclusions: "In severe cases of pernicious anemia the marrow is nearly exhausted. The stimulus of the anemia with its oxygen lack is just enough to keep it functioning. A sudden lowering of the stimulus is produced by a large transfusion, and the activity of the marrow markedly depressed. It follows, therefore, that in cases of pernicious anemia with a feeble reacting bone marrow, as indicated by the reticulocyte count, small transfusions are preferable to the larger ones."

The effect of transfusions on anginal pain associated with anemia is forcibly brought to us in a case of myelogenous leukemia admitted to my service some months ago. That the opening of the coronary valves are dependent on the diastolic pressure has long since been brought to our attention by Paul White and Herrick, as in the severe anemias the diastolic pressure is low and often absent, these cases frequently are victims of angina. A woman with an advanced myelogenous leukemia, with a red cell count of 2,000,000, systolic pressure 70, and an absence of diastolic pressure, accompanied by pain anginoid in character which could not be relieved by nitrites and morphine, was given 300 c.c. of citrated blood. At the completion of the transfusion her diastolic pressure was 30; during the afternoon her pressure assumed a ratio of 100/45; she became free of pain and was able to walk around the wards the next day, and left the hospital one week later to continue her treatment of the leukemia by radiation. Can any therapy offer as much in this condition—the elevation of pressure by blood volume and the direct effect of the transfusion upon the anemia?

Anuria is possibly the gravest complication associated with transfusion. When one experiences this condition twice, then reads reports of it from Bancroft, Bordely and Curtis in this country; Witt, of London, Berard, of Paris, one is compelled to be cognizant of the fact that such a condition is to be reckoned with, nor can its seriousness be minimized. That it is the results of incompatible blood, producing a tubular nephritis with hemoglobin infarction of the uriniferous tubules cannot be questioned. Eleven of the sixteen reported cases died with a uremia, while two recovered after decapsulation; the remaining four recovered after many weeks. Clough and Clough have reported one case that the anuria was overcome after forty-eight hours, with a complete recovery. Partial anurias have in many instances recovered; however, where edema begins to manifest itself, decapsulation offers more than any known procedure at this time.

What is the life of the transfused corpuscle, and does it actually perform any function after its reception by the host? Winifred Ashby many years ago was able to prove that the life of the transfused corpuscle was over thirty days, yet at this time neither he nor Archibald, Primrose, Robertson or Watson were able to definitely state that the effect of the transfusion was other than a purely mechanical part on increasing the bulk of the depleted blood. Wildegans has recently thrown considerable light on this much discussed subject in that he has definitely shown that although hemolysis begins at the end of the first week, reaching its maximum the latter part of the second,

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with a gradual decline during the third week, the greater part of the corpuscles live in the body of the host several weeks; they do not become an integral part of the host's body, but like all cells finally wear out and die. They circulate in the vessels of the host and act for the most part not unlike the blood that is already there. Likewise, they take part in gas exchange and contribute to enlarging the respiratory surface. Unlike the author, he feels that where there is a marked reaction accompanied by chill with a marked rise in temperature, the transfusion is followed by a decrease in the total erythrocyte count and hemoglobin, although there may not be any definite effect on the nitrogen excretion in the urine. At the same time the residual nitrogen of the blood may give no evidence of anomalies of albumen catabolism or an increase in albumin metabolism in the circulation. Residual nitrogen remains the same, but oxygen carrying capacity of the blood is increased.

Freund feels that transfusion has a definite stimulating effect of the hematopoietic center of the host, and is likewise strongly of the opinion that wherever there is a destruction of corpuscles in the circulation, although they may be homologous ones, it is attended by temperature.

Conclusions

1. From the degree and severity of reactions, one may select either the citrate or direct method.

2. The selection of donors from typing without cross agglutination is condemned; likewise, all typing should be carried out with fresh sera. No donor should be used under six months with the same recipient.

3. The albuminoid or anaphylactic reactions acompanied by marked increase in temperature with chills decrease the red cell count and hemoglobin of the recipient, and they are the result of errors in cross matching or blood typing.

4. Transfusions of over 300 c.c. in primary anemias are not followed by an increase in the red cell count or hemoglobin of the recipient, and often is followed by harmful results.

5. Transfusion has a definite stimulating effect on the hematopoietic center, as demonstrated in a case report.

6. Results may be accomplished by small and frequent transfusion in blood stream infections.

7. Cases of angina pectoris with an absence of or a very low diastolic pressure accompanied by severe anemia are benefited by transfusion.

8. In hemorrhage accompanied by shock, or in marked secondary anemia where operative procedure is necessary, transfusion of 500 c.c. or more, as indicated, is used, as we wish to restore blood volume and oxygen carrying capacity.

9. Anuria is the result of incompatible blood. It is an exceedingly grave condition, and decapsulation offers more than any other procedure.

As I go back over this paper to see what it is all about, I find that there is a thread of thought, rather slender at times, I admit, that binds together the seemingly disconnected pieces out of which it has been constructed. The motive seems to be not to declare so much what we know concerning blood transfusion, the cause of immediate and delayed reactions and complications, as to point out certain gaps in our knowledge—certain problems that still await solution. Also discussed are the causes of reactions, either anaphylactic or albuminoid in nature, the pathology, the disease manifestations, the cause of anuria; likewise the pitfalls of blood grouping and cross agglutination, and the mystery of transfusion on the erythrogenic center. Let us realize there is much need for cooperation between the transfusionist, the pathologist, experimental physiologist and haematologist. Intensive, concerted investigation will surely bring forth results.

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Driver Building.

LUDWIG'S ANGINA.*

R. M. DEHART, M. D., Floyd, Va.

This condition was observed as early as 1836 by Dr. Ludwig, whose name it bears, and at that time he contributed to his local medical journal an article describing it to be "an illness which, in spite of all local and general treatment, always ends fatally." He and many of his contemporaries observed this disease exceedingly well.

Ludwig's differential diagnosis from other throat infections is still valuable. It follows:

"1. Comparatively slight inflammation of throat itself; 2, the peculiar wooden hardness of the cellular tissue, on which an impression cannot be made; 3, the hard swelling under the tongue and the swelling on the inner border of the mandible; 4, the well defined border of hard edema in the neck; and 5, the absence of infection in the regional lymphatic glands."

Ludwig's angina is an inflammatory process, involving the cellular tissue of the floor of the mouth and the submaxillary region of one or both sides of the neck. It affects the connective tissue spaces, being a cellulitis, not a lymphangitis or lymphadenitis; the lymph nodes and the submaxillary and sublingual salivary glands are not primarily diseased but may be invaded secondarily. It involves both the sublingual and the cervical tissues; it is not confined to either. It may begin in either situation, but until it spreads from the submaxillary tissues to the sublingual tissues, or in the reverse direction, from the sublingual tissues to the submaxillary region, it does not constitute Ludwig's angina. As long as it is confined solely to the submaxillary and cervical tissues, it is merely a submaxillary or a cervical cellulitis; as long as it is confined to the sublingual tissues, it is merely a sublingual cellulitis. It is the simultaneous involvement of the submaxillary and the sublingual tissues

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., September 21, 1932.

in a confluent septic cellulitis that warrants the condition being recognized as a distinct clinical entity.

The present state of the knowledge about Ludwig's angina should stimulate the activity of the physician, and then the mortality, which is still very high in this dreaded disease, would be reduced. It is very essential that the physician recognize it in its earliest stages because he is usually the one who sees the case first. What the experience should teach, above all, is the prophylaxis of the disease. The physician should cooperate with the dentist, and the latter should think twice before he extracts a tooth or a root or makes an injection whenever he sees the hard swelling without fluctuation. His activity in this direction is likely to cause the complication.

The etiology of Ludwig's angina can usually be traced to some disease of the oral cavity, as carious teeth, ulcerated mucous membranes, peridental abscesses, wisdom teeth breaking through, necrotic alveola, peritonsillar abscess following tonsillectomy and Vincent's angina; dental infections (with or without trauma from extraction of teeth) is one of the most frequent causes of Ludwig's angina, according to Ashhurst. The streptococcus is the most frequent offending organism.

Since the infection of the oral cavity is the most frequent cause of Ludwig's angina, it is well to have clearly in mind the pathologic lesions present and the influence exerted on the spread of infection by the surrounding anatomic structures.

Anatomical Considerations.—In reviewing the anatomy of the region, stress should be given to the character and relationships of the mylohyoid muscle. This muscle forms a floor for the cavity of the mouth, a diaphragm covered by dense fascia superficially, which acts as a distinct barrier to the extension forward and externally of any infection in the floor of the mouth. It arises from the mylohyoid ridge of the mandible and extends from the symphysis in front to the last molar tooth behind. The posterior fibres pass inward and slightly downward, and are inserted into the body of the hyoid bone. The middle and anterior fibres are inserted into a midline raphe. The relations of the mylohyoid muscle are given as follows: by its superficial surface—with the platysma, the anterior belly of the digastric, the suprahyoid aponeurosis, the submaxillary gland, submental vessels, and mylohyoid vessels and nerve; by its deep surface—with the geniohyoid, part of the hyoglossus and styloglossus muscles, the hypoglossal and lingual nerves, the submaxillary ganglion, the sublingual gland, the deep portion of the submaxillary gland and duct, the sublingual and ranine vessels, and the buccal mucous membrane.

Pathological Considerations.—At the time of operation there is usually no abscess. Only a few drops of pus, if any at all, are seen—occasionally in the submental region, but more commonly in the submaxillary region. What is present is a tense edema. The patient's symptoms undoubtedly cannot be accounted for by the edema superficial to the diaphragm of the mylohyoids. What does push up the patient's tongue, thus causing the mechanical symptoms, is the marked edema of the loose cellular tissue in the floor of the mouth, i. e., on the oral side of the mylohyoid diaphragm.

It is this pressure that must be released. Here, then, is the crux of the surgical treatment of Ludwig's angina: it is not incision and drainage that is most important, but rather release of pressure.

Treatment.—After the diagnosis of Ludwig's angina is made there should be no time lost in instituting drainage of the affected part.

When cellulitis occurs in other situations, especially in the limbs, early incision is important, but you can temporize more in cases of this type with poultices than in cases of Ludwig's angina. Patients with Ludwig's angina are threatened with suffocation. The tongue is pushed up against the roof of the mouth, and they are forced to keep the mouth open in order to breathe. Tracheotomy is sometimes necessary, and the instruments for this operation should be kept ready at all times in case this emergency occurs.

Sites of Incisions.—(a) The first incision should be made in a midline between the chin and the hyoid bone, and the knife should pass directly through the median raphe, and through this incision a long curved forceps is passed and the wound opened thoroughly and a gauze or rubber drain inserted.

(b) The second incision is made anteroposteriorly well below the angle of the jaw of the side affected, but through the skin and platysma only. A long curved forceps is then thrust into this incision, and the submaxillary space opened thoroughly. A drain is placed in this, as in the first incision. Ashhurst extends both incisions through the mucous membrane into the mouth, and places a drain from

inside of the mouth down through the wound. Many surgeons differ in this part of the operation, and only make an incision as described above.

(c) The third incision is made in case there is any infection on the opposite side of the neck.

These incisions can be made without fear of causing hemorrhage or injury to the nerves. In desperate cases, they may be made even without any anesthetic. In most cases, however, novocain infiltration in the skin or gas is used as an anesthetic. The majority prefer local anesthesia.

Wet dressing of Epsom salts is used to the wound. This dressing is covered with wax paper to keep it moist, and it is changed as often as it becomes soiled.

Pus is not always encountered in making this incision, because it has not yet formed. If the incisions are made promptly, the stage of suppuration may be prevented from developing.

Fluids should be given freely by rectum, subcutaneously, or intravenously.

In case the patient is critically ill, some advise the antistreptococcic serum and think this shortens the course and prevents complications.

I shall present the following case report in order to illustrate some of the essential points about this condition:

The patient, age 25, came to my office on March 26, 1931, complaining with a sore throat and pain when opening his mouth. The pain began two or three days before after a dentist had probed in a molar alveola pocket, which had been extracted a few weeks previously. The left tonsil was very painful to pressure, but no swelling was present. There was a firm swelling in the submaxillary region. I treated him about three or four months before for Vincent's angina, and he apparently made a complete recovery. He gave history of frequent attacks of tonsillitis.

The following day, March 27, 1931, I saw the patient again. His temperature was 102, pulse 130, and he appeared sick and suffering a great deal of pain in left side of his face. The swelling in the submaxillary region had increased and spread underneath the chin and was board like in hardness. There was a well defined border of this hard edema in the neck with redness. The tongue was swollen and the mucous membrane in the floor of the mouth was swollen and elevated to the upper margin of his gums.

I advised the patient that hospital treatment was necessary immediately, and he was sent to the Jefferson Hospital in Roanoke, Va.

The submaxillary and submental regions were incised and drained as described in the treatment above. He made an uneventful recovery, and was discharged from the hospital in fourteen days.

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THREE SINS AGAINST CHILDREN—PURGATION, DEHYDRATION, STARVATION.*

T. D. WALKER, JR., M. D., Newport News, Va.

One finds himself in the midst of conflicting opinions when he attempts to discuss purgatives, for after a man has practiced medicine for a few years he develops his own ideas about them, so possibly there can never be any equanimity of thought on the subject. I have no desire to discuss the various types of purgatives, cholegogues, hydrogogues, etc., their indications and contra-indications, but simply have in mind suggesting moderation in their use in treating children.

John Burroughs once said that we are "built up around a gut," and some seem to believe that all the maladies of childhood have their origin in the gut, and with the first indication of fever a drastic purgative is given. If the fever continues, drastic purgation is continued and a second and even a third purgative is given, the thought being that the continuation of fever is due to toxic absorption from the bowel and this toxic material must be removed. This conclusion is often reached without a

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Suffolk, Va., November, 1931.

thorough search being made for the cause of the illness, which, upon examination, may be found far removed from the gastro-intestinal tract and located in the throat, ears, kidneys, or skin. If the gastro-intestinal tract is at fault there will be evidences of the fact, such as vomiting, and watery, mucous, or bloody stools. Since vomiting occurs with almost every infection of childhood, the character of the stools is more informative than vomiting. If the stools remain practically normal in character, it is almost a certainty that the trouble is not in the bowel.

Gastro-intestinal tract infections which cause fever are more often secondary than primary. For instance, an infectious diarrhea is often secondary to an upper respiratory tract infection.

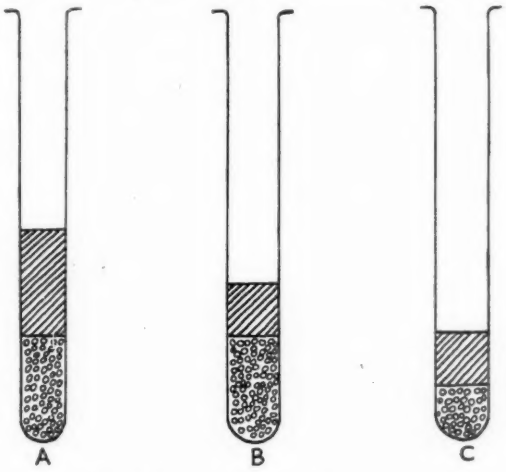
To what extent then should children be purged? In the beginning of a diarrhea a mild purgative should be given, but after the diarrhea has been well established a purgative should not be given. If the diarrhea is due to food, and a fermentation or putrifaction is present, changing the food will correct the condition and a purgative is not necessary. If fermentation is present with acid stools and chaffed buttocks, a protein milk, such as buttermilk, Finkelstein's milk, or skimmed milk with casec will correct the condition. If putrefaction is present with alkaline, foul smelling stools, reducing the proteins and increasing the carbohydrates will correct the condition. A fermentative diarrhea is by far the more frequent of the two. If the diarrhea is infectious with fever and blood and mucous in the stool, a purgative will increase the irritation. Nature tries to protect an irritated mucous membrane by pouring out an alkaline mucous, so drastic purgation does harm by removing the alkaline protection and increasing the irritation of an already inflamed surface. If the diarrhea is serous or watery, as in cholera infantum, a purgative is contra-indicated because it increases the watery stools and leads to rapid dehydration. In all other diseases of childhood, e. g., tonsillitis, otitis, pyelitis, exanthemata, etc., a mild purgative just sufficient to empty the intestinal tract of food which may ferment or putrefy is all that is necessary. Therefore, the harmful effects of purgation are irritation, dehydration, and prolongation of convalescence. We are admonished to practice moderation in all things, so I would advise moderation in the use of purgatives in treating children, and avoid the first sin against childhood.

Dehydration means—to deprive or to be freed of water or the elements of water. Water and life are synonymous terms as far as the human body is concerned. The blood plasma —that important carrier of nutritive material to every organ and tissue—contains over ninety per cent water. The brain which regulates and correlates so many intricate activities and processes contains from eighty to ninety per cent water. The liver cell which is associated with so many processes which are vital to the maintenance of normal metabolism contains seventy-five per cent water. The mighty muscle which is so importantly related to feats of strength is three-fourths water. The saliva which reduces starches to soluble sugars is almost pure water, ninety-nine and five-tenths per cent. Bone which has been shown by tests to possess a tensil strength of 25,000 pounds per square inch, which is one and one-fourth times as great as that of cast iron and more than twice that of good timber is forty per cent water. If a 150-pound man were put in an electrical oven and all the water driven off, the undertaker would have only 50 pounds to handle.

That physicians as long ago as the early part of the eighteenth century were impressed with the dietary importance of water is indicated by a pamphlet published in London and reprinted in Philadelphia in 1723. The pamphlet is by John Smith, C. M., and is entitled "Curiosities of Common Water," or "The Advantages Thereof in Preventing and Curing Many Distempers." Among the interesting excerpts from the volume are the following: "In the Country of Cornwall, the poorer sort, which never or but very seldom drank any drink but water, were strong of body and lived to a very great age." The author quotes a Dr. Manwearing as saying: "In the primitive ages of the world water drinkers were the longest livers by some hundred of years, not so often sick and complaining as we are." That men and lower animals will live longer without food than without water is well recognized. Philip B. Hack kept an adult dog living 100 days by giving it 23½ ounces of water daily. Rubner says that a fasting dog may lose all its glycogen and fat and one-half of its pro-

tein and still live, but if it loses one-tenth of its water it dies.

When for any reason the amount of water eliminated from the body becomes greater than the amount taken in, desiccation or drying out of the blood and tissues results. This may take place rapidly in vomiting, or in the severe diarrheas, such as cholora infantum, or more slowly in the prolonged diseases, such as infectious diarrhea or typhoid fever.



A. Normal Blood—Serum and cells equal.
B. Dehydration—Cells remain normal—Serum decreased in volume.
C. Athrepsia—Blood volume decreased but proportion between serum and cells remains constant.

Symptoms of the drying out process are as follows: loss of weight which may be as much as a pound a day. This loss of weight is a loss of fluid and not a melting away of the tissues. The appearance changes, the features become sharpened, and the eyes are sunken and lose their lustre if the loss of fluid is rapid. The skin may take on a dusky color and remain in folds when pinched up. The lips and finger-tips may be very red due to a piling up of the red blood cells in the capillaries. The tongue is dry and the kidneys are inactive because of the blood concentration. Waste products are retained, e. g., acid sodium phosphate and the non-protein nitrogen group. If the water loss is extreme respirations are disturbed and breathing becomes deep and labored as the result of acidosia. The acidosia is due, in part, to the failure of the kidneys to eliminate acid sodium phosphate and in part to the acids produced in the tissues as the result of diminished oxidation due to deficient blood circulation. Leucocytosis is usually present either as a compensatory condition or due to the thickened state of the blood. Some degree of fever is usually present, and this is because water deprivation causes increased protein destruction. This combined with decreased blood volume and insufficient water for heat dissipation causes fever. Fever frequently subsides when sufficient water has been given. The mental condition is often disturbed and there is restlessness and wringing of the hands. This disturbance of the central nervous system may go on to convulsions and coma.

So excessive loss of water, whether it be from vomiting, acute diarrhea or a prolonged drying out, must be checked and the intake of fluids increased to maintain a postive water balance.

A. Piling up of cells in arteries, due to dehydration.—Blood count from artery and vein differs.
C. Piling up in capillaries causes red lips and finger-tips.

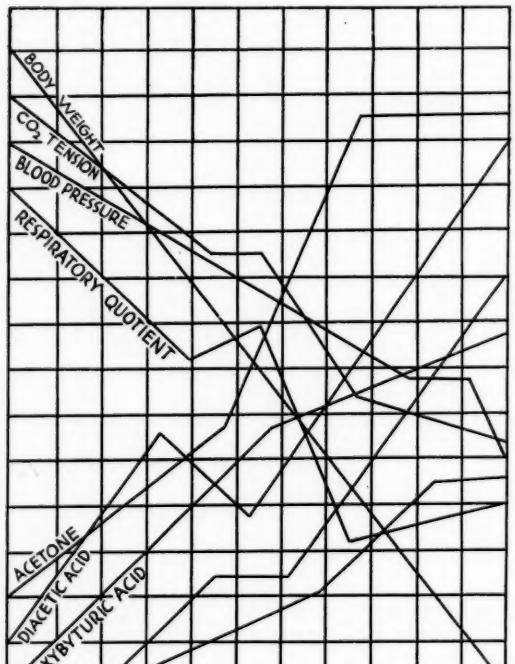
How much fluids should be given? A sick child should have 2 to 3 ounces per pound per day. It is not always practical to give that amount but it should be approached as near as possible. It may be given subcutaneously, intravenously, intraperitoneally, or by mouth. By mouth is preferable because the water passes directly through the liver and tends to wash it out. This is important in infections of the bowel, for in these conditions the liver is enlarged and liver function disturbed.

Fluids should be given until the water balance remains positive. This happens when kidney function returns, the sunken eyes seem to return to their sockets and the dark circles around the eyes disappear, the weight loss checked and normal elasticity of the skin returns, and the cherry red lips and finger-tips return to normal color. Therefore, if we give fluids patiently and persistently, if necessary having a nurse sit by and give it with a teaspoon until a positive water balance is maintained, we will save the lives of many children and will not be guilty of committing the second sin against childhood.

Starvation or hunger is the deprivation of a organism of any or all of the elements necessary for its nutrition. For proper nutrition carbohydrates, proteins, fats, inorganic salts, water, and vitamins are necessary. Starvation

may be partial when any of these elements are inadequate, or it may be complete when all of these elements are inadequate. The efficiency of human digestion during fever is not reduced more than 5 to 10 per cent, and the flow of digestive enzymes is only slightly interfered with, provided the organism as a whole is properly nourished.

If metabolic function is to be maintained near normal a definite amount of the various food elements must be given daily. For instance, about 15 grains of protein per pound per day



Starvation depresses body function. Harmful products accumulate.

are necessary to maintain a nitrogen balance. This amount is contained in one and one-half ounces of milk. Eighty grains, a little more than one teaspoon, of carbohydrates, and 20 grains, one-third teaspoon, of fat per pound per day are necessary. These foods should provide sufficient calories to prevent a loss of weight, for harmful consequences follow a continued loss of weight due to starvation. Blood pressure, alveolar CO_2, tension, and respiratory quotient are lowered, while the ketones, ammonia and other harmful products increase. The sick child cannot be fed as bountifully as the well child but we can avoid the prolonged giving of broths and gruels which contain only three calories per ounce. If a quart of such food is taken a day, only 96 calories will be given and the harmful effects of starvation will follow.

Therefore, we recognize the importance of an adequate diet for the sick, and are aware of the dangers which occur from an insufficient amount of food or nourishment. My suggestion is feed your sick children, try and maintain as near as possible the normal metabolic functions, and thereby avoid the third sin against childhood.

Woman's Auxiliary, to the Medical Society of Va.

President—Mrs. William Lett Harris, 1112 Matoaka St., Norfolk.
President-Elect—Mrs. Joseph Bear, 3012 Monument Ave, Richmond.
Recording Secretary—Mrs. Fletcher J. Wright, 49 S. Market St., Petersburg.
Corresponding Secretary—Mrs. Charles A. Saunders, 1000 Gates Ave., Norfolk.
Treasurer—Mrs. Reuben F. Simms, 2034 Park Ave., Richmond.

State Auxiliary—Executive Board Meeting.

On Saturday, March 11th, an Executive Board meeting of the Auxiliary to the Medical Society of Virginia was held in the Richmond Academy of Medicine Building. This meeting was attended by the State President, Mrs. Wm. Lett Harris, Mrs. M. N. King and Mrs. Southgate Leigh, from Norfolk, Mrs. T. Elmore Jones, from Portsmouth, Mrs. H. M. Snead and Mrs. Meade Edmunds, from Petersburg, and by ten other State officers who reside in Richmond. Plans for promoting the state work were discussed and methods for further organization were decided upon.

The Richmond women entertained the out-of-town members at lunch at the Gypsy Tavern. The social contact was most delightful and the work accomplished of much benefit to the organization.

Local Auxiliaries.

Auxiliary to Post-Graduate Medical Society

The Auxiliary to the Post-Graduate Medical Society met in Petersburg, Va., Friday, March the 3rd, at the Y. M. C. A. Mrs. H. M. Snead, president, presided.

Mrs. William Lett Harris, Norfolk, State President, was present and gave a talk on the work of the Auxiliary which was most interesting. The recent president, Mrs. J. Allison Hodges, Mrs. Stone and Mrs. Weitzel were guests from Richmond. Mrs. Joseph Bear was unable to attend on account of sickness, and arranged for Mrs. Hodges to talk on County Organization.

Ladies from adjoining counties were notified and special effort was made to create more interest in Auxiliary work.

Arrangements have been made for a rummage sale, April 1st, to raise funds for the Hospital.

Auxiliary to Richmond Academy of Medicine

Mrs. Stuart McGuire gave a talk on The Need of Play in Character Building at the regular monthly meeting of this Auxiliary in March.

At this meeting it was voted to have a card party in May for the purpose of raising money for the work of the Auxiliary.

Auxiliary to Norfolk County Medical Society

The Auxiliary of the Norfolk County Medical Society is sponsoring a weekly Health Talk over WTAR. The President, Mrs. Franklin D. Wilson, Norfolk, is president of this Auxiliary.

Program for Annual Meeting of National Auxiliary.

The Woman's Auxiliary to the American Medical Association is to hold its annual meeting in Milwaukee, Wis., June 12th-16th. A most attractive program has been arranged and all women attending the American Medical Association convention with their husbands, whether or not Auxiliary members, are invited to participate in the entire program given below.

Woman's Auxiliary
to the
American Medical Association
Eleventh Annual Meeting
Milwaukee—June 12-16, 1933
Headquarters: Hotel Pfister, Milwaukee, Wisconsin

Preliminary Program

Monday, June 12, 1933

12:30 P. M.—Luncheon at College Woman's Club, in honor of Past Presidents, followed by National Board Meeting and visit to American Medical Association Exhibits at Auditorium. Tickets, $1.00.

7:00 P. M.—Dinner for National Board, delegates and wives of officers and delegates of the American Medical Association, at Woman's Club of Wisconsin
Musical Program furnished by artist members of Auxiliary to Medical Society of Milwaukee County. Tickets $1.25.

Tuesday, June 13, 1933

9:00 A. M.—General Meeting, Roof Room, Hotel Pfister. Mrs. James F. Percy, *presiding.*

12:30 P. M.—Luncheon and Bridge, at the Wisconsin Club. Tickets $1.25.

2:00 P. M.—*Attractions available for those not wishing to play bridge, are Layton Art Gallery, Milwaukee Art Institute, Milwaukee Museum, Curative Work Shop and Vocational School, or
*Bus Trip to County Institutions, Milwaukee Children's Hospital Convalescent Home, and Washington Park Zoo.

8:00 P. M.—General Meeting of American Medical Association.

10:00 P. M.—Informal Dance, at Wisconsin Club. Courtesy of State Medical Society of Wisconsin. Hostesses: Woman's Auxiliary to the State Medical Society of Wisconsin.

Wednesday, June 14, 1933

9:00 A. M.—General Meeting, Roof Room, Hotel Pfister. Mrs. James F. Percy, *presiding.*

12:30 P. M.—Auxiliary Luncheon, Fern Room, Hotel Pfister. Toastmistress, _____. Guests and speakers from the American Medical Association. Musical program. Tickets $1.00.

4:00 P. M.—*Teas in private residences.

8:30 P. M.—Light Opera _____. Tickets, $1.00.

Thursday, June 15, 1933

9:00 A. M.—General Meeting. Roof Room, Hotel Pfister. Mrs. James Blake, *presiding.*

12:00 Noon—Trip to Oconomowoc Lake District. Luncheon 12:30 P. M., Carnation Milk Plant, Oconomowoc, Wisconsin, Transportation and Luncheon courtesy of Carnation Milk Company, or

12:30 P. M.—Buffet Luncheon. Crystal Room, Hotel Pfister. Tickets 75c.

2:00 P. M.—*Sight-seeing Tour of Milwaukee.

6:30 P. M.—"Bring Your Husband" Dinner. Fern Room, Hotel Pfister. International-House-Cabaret. Tickets $1.50.

9:00 P. M.—President's Reception and Ball. Schroeder Hotel. Hosts: The American Medical Association.

Friday, June 16, 1933

10:00 A. M.—Golf Tournament.
All trips start from Hotel Pfister.

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*Bus transportation to be paid by individuals.

Mrs. Rock Sleyster, *General Chairman,*
Wauwatosa, Wisconsin.

Comments on Advertisers.

False Rumors Concerning Viosterol Denied by Dr. Steenbock.

Mead Johnson & Company states that ever since viosterol was offered to the medical profession, about four years ago, it has been attacked by various persons. Some of these attacks no doubt were sincerely motivated, but others were seized upon and exaggerated by interests who had no viosterol to sell.

Recently a new form of anti-viosterol propaganda has been reported by physicians all over the country. It is circulated by word of mouth—never in writing—and the apparent purpose is to influence physicians to prescribe vitamin D agencies other than viosterol.

Physicians are being told, for example, that Dr. Harry Steenbock has "condemned" viosterol, that the Wisconsin Alumni Research Foundation "would withdraw viosterol from the market in ninety days," etc., etc.

In answer to these malicious untruths, Dr. Harry Steenbock makes the following statement:

"Viosterol in its various forms has to date been found fully as valuable in medical practice as was anticipated at the time that it was first introduced to the American markets. Up to the present time there have been no reports of any untoward effects from its administration, although originally it was anticipated from the results of animal experiments that some cases of intoxication might result from its use in human medicine. . . . I see no necessity for reversing my original opinion as to its outstanding merits in any way whatsoever. Any statement to the contrary can be definitely labeled as false." (Signed) H. Steenbock.

Physicians can draw their own conclusions in regard to this valuable therapeutic agent that has endured four years of the most searching experimental investigation and clinical use not only in rickets but also for controlling calcium-phosphorus metabolism generally.

Cocomalt Valuable in Malnutrition.

An alarming result of the economic depression through which we are passing is the tremendous increase in mal-nutrition among school children. A recent survey of 130,000 school children in sixteen states showed that 21 per cent were underweight by 10 per cent or more.

One way in which school and medical authorities are meeting this grave problem—combating this ever-increasing menace—is by serving Cocomalt (R. B. Davis Company) in milk to the youngsters at lunch time. Every glass is equal in food-energy nourishment to almost two glasses of milk alone; and as a result the children very quickly show signs of mental and physical improvement. Wherever possible, parents have been asked to cooperate by serving Cocomalt in milk at home. Children love this delicious chocolate flavor food-drink and drink far more of it than they would of milk alone. Very gratifying gains in weight and energy have been reported.

Cocomalt contains a rich supply of Sunshine Vitamin D and is accepted by the American Medical Association Committee on Foods.

Book Announcements

Diseases of the Heart. Described for Practitioners and Students. By SIR THOMAS LEWIS, C. B. E., F. R. S., M. D., D. Sc., LL. D., F. R. C. P., Hon. D. Sc. (Michigan). Physician in Charge of Department of Clinical Research, University College Hospital, London; Physician of the Staff of the Medical Research Council, etc. New York. The Macmillan Company. 1933. Octavo of 297-xx pages. Cloth. Price, $3.50.

The author of this very interesting, practical and important volume states that he desires to furnish in concise and workable form that data which are useful and important in the clinical diagnosis and treatment of heart disease. He uses as his guide in constructing the various sections, that which he has observed and proven to be true by personal confirmation and evaluation.

It is interesting to note that the first chapter deals with Cardiac Failure; however, this is most appropriate, for it is this departure from physiology which brings the patient to the physician for advice.

Every aspect of Heart Disease is covered, including a most valuable discussion of the heart in Child-bearing, Anesthetics, and Operations.

One is impressed with the details given in the discussion on Treatment.

The last chapter, a general summary of diagnosis, prognosis and local treatment is a particularly important contribution.

If the book consisted only of the chapters dealing with Heart Failure, Heart Strain, Work and Failure, and the last chapter, noted above, it would still be one of the most valuable books written on heart disease in the past 25 years.

The volume should find a place on the desk of every practitioner of medicine and teachers would do well to recommend it unconditionally to their classes as a sane guide to clinical cardiology.

WILLIAM B. PORTER, M. D.

Further Studies on the Pharmacology of Certain Phenol Esters with Special Reference to the Relation of Chemical Constitution and Physiologic Action: The Histopathology of Some Neurotoxic Phenol Esters. National Institute of Health, Bulletin No. 160. U. S. Treasury Department. Public Health Service, Washington. 1932. United States Government Printing Office. Paper. 69 pages. For sale by the Superintendent of Documents, Washington, D. C. Price, 10 cents.

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Editorial

To the Members of the Medical Society of Virginia.

Probably at no time in the history of medical organization in this country have national, state, and local medical societies been more important than now. The influence of medical societies in the past has found expression, in great measure, in the splendid record of achievements in ethical and scientific medicine. Much of the great medical service rendered the country during the past third of a century has been grounded upon the strength of ethical medical values, as have found expression in organized medicine. The genius of the medical profession has spoken and acted for the protection of medical practice and against the charlatan and the quack. It has ever striven to advance its art and scientific achievement in the interest of the public welfare. This has been evidenced by the efforts of the national societies in the interests of medical education, in the fight for ethical advertising and publications, in the opposition and exposure of medical frauds and patent medicines, in the strong effort to promote the public welfare in all national legislation for public health and in governmental services of the nation, in peace and war. The national society, with its membership throughout the nation, has not only done a remarkable work for the science of medicine and for the public interests, but also for protection and support of professional, scientific, and economical welfare of the individual doctor.

The same may be said, in lesser degree, of the value and worth of state and local medical organizations. These state and local societies have performed invaluable service for the public interests and for the individual interests of practitioners of medicine.

There can be no argument on this point. No doubt something may be said by critics. Some may affirm that they find objectionable features in such organizations, that politics, favoritism and like faults have been shown in such organizations. These and like objections can never, however, overbalance the larger values of the system of organized medicine in America which has done so much for the public and the profession alike.

This comment is made to urge every member of the Medical Society of Virginia to rally to the cause of medical organization. This can only be done by throwing enthusiastic support to local, state and national organizations. Members are urged to inform themselves upon the economical and professional needs of the times and to attend meetings where action is to be taken that may influence the trend of medical practice and scientific advancement in medicine. Members are urged to place these features of medical organization in the forefront of their thoughts during the coming months and be prepared to take action in support of those principles that seem to offer protection and advancement of medical practice in this country.

In these times of economic and political dis-

tress, it will be especially difficult for members to meet the demands of dues and expenses connected with the maintenance of active membership in these several national, state and local medical societies but, let it be impressed, that there never was a time, probably, when such funds were more urgently needed and likewise more wisely expended in this cause.

A strong, united, vocal, national, state and local medical profession can solve the present-day ethical, economical, professional and scientific problems—of this, its past achievements assure.

Arterial Thrombosis in Middle Life.

Comment here upon the subject of arterial thrombosis in middle life necessarily must be general in nature. No survey of this subject has been made as applied to the arterial distributions in the several extremities and in the viscera, but it is a common clinical experience to observe arterial thrombosis and infarction in the heart and in the brain, or in the background of arteriosclerosis of the extremities. A recent discussion by Conner* brings out many salient and suggestive considerations related to arterial thrombosis in viscera. This article deserves a perusal by general practitioners. Conner approaches the matter by a presentation of the facts of today as accepted clinically in coronary thrombosis. Coronary disease has received nation-wide discussion within recent years. Now, as never before, even greater than in many diseases, more apparent to the eye, coronary disease is recognized and understood. Probably the average medical practitioner of today, suggests Conner, is more familiar with the coronary thrombosis than eminent clinicians of two decades ago. The wide publicity given coronary thrombosis in medical journals and medical societies within the past ten years has brought clearly to medical minds of today that clinical syndrome. Now, as Conner suggests, may it not be true that in the distribution of the arterial system of other organs and viscera like phenomena are occurring without recognition?

Coronary artery disease appears to be common in early middle life. In a group of 287 cases, diagnosed as being thrombosis of the coronary artery, Conner notes that in 75 per cent, the symptoms appeared before the age of 61 years, and in 33 per cent before the age of 51 years. Arterial thrombosis naturally ties itself up with arteriosclerosis but it is to be remembered that coronary thrombosis occurs, not infrequently, without arterial hypertension. Conner cites a group of 500 cases of angina pectoris, reported by White and Bland, in which only 36 per cent showed arterial hypertension. This observation points to the situation that, while arterial thrombosis of the coronary artery frequently occurs in general arteriosclerosis with hypertension, it occurs also without evidence of this condition. In connection with this, one might ask whether other factors besides arteriosclerosis enter into the cause of thrombosis. There are reasons for thinking that other factors may produce thrombosis but the evidence is not conclusive. It is suggestion and probable that conditions of the blood itself may favor thrombosis without hypertension. In the kidney arterial thrombosis as a result or embolic infarction occurs. But the symptoms are so indefinite that the condition is rarely recognized. Postmortem examinations disclose evidence of old infarcts in arteriosclerotic kidneys. But would it not more likely be recognized were the possibility of its occurrence kept in mind? In persons with general signs of arteriosclerosis overtaken with sudden pain in the kidney region, with more or less fever, leucocytosis and presentation of blood cells and albumen in the urine, one may strongly suspect arterial thrombosis there. In the spleen, Conner points out, postmortem evidence of old healed infarcts is found, disclosing signs of previous arterial thrombosis. Pain over this area, fever, leucocytosis, tenderness and possibly muscular spasm over the splenic region, strongly directs attention to arterial thrombosis in the spleen. Should friction sounds be elicited over this area, added evidence is obtained.

In the pancreas, points out Conner, arterial thrombosis is rarely known and clinically, signs of such arterial accident are entirely wanting. It is thought not improbable that such infarction does occur and is evidenced by the sudden occurrence of glycosuria, pain in the epigastrium and umbilical region, with tenderness there and accompanied by shock, fever and leucocytosis and nausea and vomiting.

In the mesentery, infarction is recognized and is not rare. Often diagnosis is finally made at operation and postmortem. Clinical diagnosis of this condition is rare.

*Conner, Lewis A., The American Journal of The Medical Sciences, January, 1933.

Thrombosis of the vast arterial field is thoroughly established, as pointed out by Conner, especially of the small arterial branch. The wide distribution and variableness of the intestines makes the recognition of symptoms and diagnosis more or less difficult. It is recognized that infarction more frequently occurs in that area of the gut, says Conner, that is supplied by the superior mesenteric artery rather than that supplied by the inferior.

As to symptoms, the clinical evidence appears in two stages—first, symptoms of irritation of the gut, and, second, symptoms of intestinal paralysis. At first, cramp and pain, nausea, vomiting and diarrhea, prostration, collapse and toxemia occur. In a day or two pain ceases and the signs of paralytic ileus appear: obstipation, great distention, persistent vomiting, pain on pressure, fever, and leucocytosis occur.

Arterial and venous distribution of the intestines and liver make for confusion. Mesenteric venous thrombosis, arterial embolism and arterial thrombosis in the abdominal cavity make for confusion in differentiation and diagnosis. The publication of case reports and citation of instances of postmortem findings, as illustrative of these possible vascular accidents brings the subject forward in clinical experience and more frequent recognition.

High Intestinal Obstruction.

General practitioners may well listen-in on the discussion of surgeons and physiologists on the subjects of the cause of death in high intestinal obstruction. If a casual inquiry is made as to where such discussion is to be found, one sees articles largely in special journals, dealing in surgery, in journals of research and experimental work and in journals of physiology and biological chemistry and experimental medicine. It is probable that important findings are being made and that facts are being brought to light on this subject, although there is still a want of agreement.

In these columns it is merely our purpose to give suggestive comment on this matter. Often in the course of medical practice, to the family physician, comes first the patient exhibiting common but emphatic symptoms such as are excited by an upheaval of the alimentary tract in an acute obstruction of its upper segments. It becomes the duty of the doctor called into the home where the patient exhibits early symptoms of this condition, as shown in pain, nausea, vomiting, signs of exhaustion, to evaluate the situation and to read into the occasion a true meaning. Hence, it is particularly important to the family doctor to inform himself on this, as all disturbances of the digestive tract. It is in this system that much of acute pathology, more or less, demanding immediate surgical treatment, dramatically arises.

Employing an article by Herrin and Meek* as one for comment, we note the purpose of certain experiments conducted by them was to investigate the cause of symptoms and fatal course, following a known distention of the intestines, when uncomplicated by strangulation, rupture, necrosis, or peritonitis. They found that constant distention of loops with a pressure from 50 to 80 m.m. of mercury, resulted in malaise, loss of appetite, excessive secretion from the loops, desiccation and dechlorination of tissues, decreased blood and plasma volumes, increased hemoglobin content, moderated by increased alkali reserve, high non-protein nitrogen, and greatly decreased blood chloride. Death occurred on about the eighth day and it was thought it was not due to toxemia from bacterial products or necrotic substances. Death, it was thought, was due primarily to loss of chloride—chloride which was poured out by the loop under stimulation of the mechanical pressure. While this was accompanied by decreased blood and plasma volumes, the loss of chloride seemed more important and primary as the animals were kept alive by introducing small quantities of 10 per cent salt solution into the intestines.

Dechlorination seemed to be the essential change following distention of the loop of the bowel.

Production of symptoms and blood changes similar to acute intestinal obstruction was produced experimentally on a group of dogs. Fifteen dogs were employed. Twenty-five experiments were made on this lot; employing Thiry and Thiry-Vella fistulas, thus looping a segment of bowel between artificial openings in the abdominal wall. This section or loop was subjected to inflation. As distention was continued, the dogs showed loss of weight, loss of gloss of hair and skin became dry, muzzle became dry and warm, eyes became shrunken and pulse rapid; fibrillary tremors and weakness of legs followed; temperature decreased and leukopenia was found. No pain occurred

*Herrin-Meek—Archives of Internal Medicine, Volume 51, No. I.

but gradual advance into coma was observed. Death followed. Fourteen of the dogs were allowed to run a fatal course—the average being eight days.

With such a set-up in experimental study, practitioners may see possibilities for an interesting series of observations on the subject of distention and obstruction of segments of the small intestines, high up in the tract. Herrin and Meek, in the study, being unable to find evidence supporting theories of toxemia as a cause of symptoms and death in distention and obstruction, turned their efforts to non-toxic factors as a cause.

The first permanent symptom which interests these workers was evidence of a marked increase in the fluid flowing into and from the loop. This was taken to be a true secretion as it contained ferments common to those in succus entericus. This fluid was rich in chloride and in excessive daily amounts. The appetite failed, malaise and anorexia followed; although the animals took water, both plasma and total blood volume showed decrease. Plasma chloride fell daily.

While the authors found that dechlorination occurred, they felt that demineralization really took place and this should not be overlooked. A loss of water and salt takes on extreme importance.

The authors were not in a position to make comparisons between experimental findings and clinical conditions but it would seem that important significance may be attached to the work herein mentioned. Readers interested in carrying on a course of reading related to this subject may find the references attached to the Herrin-Meek article of direct help. Publications of Cooper, Ochsner, Hartwell and Houget, White, Bridge, Armour and co-workers, Elman and Hartman, Dragstedt, and others, would afford interested readers material for study of the subject.

Department of Clinical Education
OF THE MEDICAL SOCIETY OF VIRGINIA

Meeting of the Department.

The annual organization meeting of the Department of Clinical Education on February 20th, at which all seven members (the chairman, Dr. R. D. Bates, and Drs. H. S. Daniel and Ray Moore representing the Medical Society of Virginia, Drs. Manfred Call and L. T. Royster representing the medical colleges, Dr. W. F. Draper representing the State Department of Health, and the Executive Secretary) and several visitors were present, was devoted primarily to discussion of proposals for postgraduate clinics and courses in pediatrics submitted by Drs. F. D. Wilson, of Norfolk, and W. P. Jackson, of Roanoke, chairmen of the child welfare committees of the Pediatric Society of Virginia and of the Medical Society of Virginia, respectively.

Drs. Wilson and Jackson reported the action of a joint meeting of their committees that morning in which it was recommended to the Department that, because pediatrics was the pronounced preference of members of the classes in prenatal and postnatal care as the subject for future courses, a similar experiment in pediatrics should be undertaken with instructors from within the state until a full-time clinician could be secured. Nineteen members of the Pediatric Society had volunteered to give three days of teaching service, at points distant from their practice, without expense except for travel, if the Department wished to use them as instructors and would organize the classes. In addition to these experimental courses, the two child welfare committees recommended all-day clinics, organized locally and without expense, for the benefit of all practitioners but for especial emphasis upon pediatrics because it is a neglected subject. Such clinics were said to be possible in cities of any size, and wherever a pediatrist was located he could be relied upon to help furnish material.

Although the general idea of instruction in pediatrics was approved, it was agreed by members of the Department after thorough discussion that the net cost of $150 to the Department could not be assumed inasmuch as it was operating on a sharply reduced budget for the year and now had a balance of only $57.38. Also, it was feared that an experimental and poorly financed program would operate to the disadvantage of later courses under a full-time instructor. Stimulation of lo-

cal pediatric clinics, however, was accepted as a desirable activity. The resolution in which the Department crystallized its discussion and which was unanimously passed is worded as follows: "That the Department of Clinical Education expresses its grateful appreciation to the Pediatric Society of Virginia for its interest in the program of post-graduate education and for its offer of voluntary teaching services by its members. The Department goes on record as favoring the provision of a definite pediatric program to be conducted under the auspices of the local medical societies, and recommends that one all-day pediatric clinic be held each year by such societies, if possible."

Post-Graduate Clinic at University of Virginia.

The eleventh in the regular series of semi-annual post-graduate clinics at the University of Virginia Hospital will be held on Thursday and Friday, May 4th and 5th. The program consists of papers on digitalis therapy, surgical treatment of tuberculosis, respiratory affections, vitamins and a symposium on malignant tumors to which six members of the staff will contribute.

The usual cordial invitation is extended to the profession in Virginia, not only the three-score who have been rather faithful in attendance during the life of these clinics but all others whose attendance may be necessarily somewhat intermittent.

Bedford Class in Prenatal and Postnatal Care.

Through the influence of Dr. Thomas P. West, President of the Bedford County Medical Society, one of Dr. Lapham's classes, an intensive course of two weeks, has been assigned to begin in Bedford on April 10th.

Dr. West secured within a day or two the enrollment of eight county physicians for the course, and it is anticipated that the class when finally organized will include nearly all, if not quite every one, of the Bedford physicians.

Classes in Prenatal and Postnatal Care in the Southwest During the Summer.

The program of prenatal and postnatal instruction begins its second fiscal year on May 1st, when Dr. Lapham will go to the Southwestern end of the state for a stay that may extend until fall.

The circuit tentatively planned for Danville and vicinity for the spring months has been postponed until later in the year because plans of organization were less well developed in the centers, except Danville, than in the several counties composing the Clinch Valley Medical Society.

The first summer circuit in the Southwest consists of proposed centers in Fremont, Norton, Big Stone Gap, Pennington Gap and Gate City. The second consists of centers in Tazewell, Lebanon, Bristol, Abingdon and Marion.

A representative of the Joint Committee was to appear on the program of the Wise County Medical Society on March 22nd to give the latest information in regard to the proposed courses. Special call meetings of the Tazewell, Scott and Lee County societies were being arranged, and it was expected that on the same trip still other societies could be visited with a view to organizing classes wherever they are desired and the minimum membership of ten is obtained.

Steady Progress in Tidewater Classes.

The number of visitors to the classes in Norfolk and vicinity has shown considerable increase since the report of last month, bringing the total number of visitors to twenty-one. The visitors are as follows: Franklin—Drs. E. A. DeBordenave, L. M. Futrell, B. A. Pope and Joel Crawford. Portsmouth—Dr. Urban. Norfolk—Drs. M. W. Healy, N. A. Nicholson, E. M. Mann, S. M. Mann and J. L. Chapman. Norfolk (Colored Class)—Dr. J. T. Givens.

The enrollment of seventy-three in the Tidewater classes makes more significant the rate of attendance, through the first five meetings, of 76.7 per cent, exactly the same percentage for all of the twenty-one classes conducted up to this time.

Opinions of Members of the Classes.

All members of Dr. Lapham's classes have been requested to submit, anonymously and with postage prepaid, a frank opinion of the work. The very encouraging score in this tabulation to date, is as follows: 131 of 136 replies said the lectures were excellent or good; 63 of 121 replies said the clinics were excellent or good; 123 of 128 replies said the course was worth the cost in time and money; and 122 of 127 replies said they would be interested in courses in other branches conducted on the same plan.

GEORGE W. EUTSLER,
Executive Secretary, Department of Clinical Education, and Secretary, Joint Committee on Prenatal and Postnatal Instruction.

Proceedings of Societies

The Post-Graduate Medical Society of Southern Virginia

Held a very instructive meeting in Victoria on the afternoon of February 28th. In the absence of the president, the meeting was presided over by Dr. E. L. Kendig, the vice-president. The attendance was good and following the meeting there was an informal subscription dinner at the Patrick Henry Hotel.

A moving picture film, "Traumatic Surgery of the Extremities," presented through courtesy of Davis and Geck, proved to be very instructive. This was followed by a paper on "Blastomycosis" by Dr. W. A. Barker, formerly of the University of Virginia and now associated with Dr. Wright Clarkson at Petersburg. Dr. Barker demonstrated an active case of this disease which was found in a rather advanced stage and, due to the prevalence of Blastomycosis in Southside Virginia during recent years, this paper and case demonstration proved to be of unusual interest.

Dr. T. G. Hardy, of Farmville, gave a paper on "A Simpler Method of Reduction of Dislocated Shoulder," many features of which appeared to be entirely new to the audience and the subject was discussed by practically every physician present.

Dr. W. Wilkinson, of La Crosse, presented a paper on "The Diagnosis of the Acute Intra-Abdominal Conditions," giving in a concise and forceful manner actual case histories of very unusual abdominal conditions, which proved instructive.

Dr. E. L. Kendig, of Victoria, presented a very excellent paper on "Problems of the Acute Female Pelvis" and also following this paper started a discussion on the recent reports of the national committee on "The Cost of Medical Care." Following a very lengthy discussion, this subject was referred to the committee on Legislation and Public Health, headed by Dr. J. Bolling Jones, of Petersburg, with the request that they report their views on this subject to the Society at some future meeting.

The final paper on the program was given by Dr. W. W. Rixey, of Richmond, on the "Treatment of Hemorrhoids and Rectal Prolapse." The physicians present were quite appreciative of Dr. Rixey's trip down to Victoria to make this presentation and they enjoyed his paper.

The Accomack Medical Society,

At its regular meeting on February 22nd, at the Drummondtown Tavern, elected the following officers for the ensuing year: President, Dr. Ira Hurst, Parksley; vice-president, Dr. A. F. Wood, Parksley; and secretary-treasurer, Dr. John W. Robertson (re-elected), Onancock.

Dr. D. L. Lekites, Chincoteague, read a paper on Coronary Thrombosis and Dr. A. F. Wood, Parksley, one on Acute Mania. Dr. J. L. DeCormis, Accomack, discussed a case of unusual and irregular fever in a baby nine months old, in which the temperature ranged from 106 to 96° F., and Dr. W. W. Kerns, Bloxom, reported an interesting case of stab wound of the heart. There was an informal discussion of the papers by all present. Although the attendance was small, the meeting was a very interesting one.

This meeting was unavoidably held over from December on account of a joint meeting having been held with the Northampton County Medical Society, which was called for the purpose of discussing State laboratory matters.

Roanoke Academy of Medicine.

The fifth meeting of the Academy for 1932-33 was held at the Lewis-Gale Hospital on Monday evening, February 6th. The meeting was turned over to Dr. W. R. Whitman, chairman, who presented the following program by members of the hospital staff.

Injuries of the Hand—Dr. Fred Davis.
Case Reports—Dr. C. D. Nofsinger.
Splenomyelogenous Leukemia: With Case Report—Dr. J. T. McKinney.
Treatment of Eclampsia—Drs. A. C. Davis and Paul Davis.
Case Report—Dr. M. A. Johnson.

A dinner meeting was held on February 20th, at which time there were two out-of-state speakers.

Dr. M. C. Pincoffs, of the University of Maryland, Department of Medicine, spoke on "The Clinical Importance of Abrupt Elevations in Blood Pressure," and Dr. Arthur M. Shipley, of the University of Maryland, De-

partment of Medicine, gave an address on "Suppurations Within the Thorax." Both of these addresses were illustrated with lantern slides.

Alumni of the University of Maryland and affiliated schools were seated at the speaker's table.

The seventh meeting of the Academy was held on March 6th with Scientific Program as follows:

Renal Function Tests—Dr. E P. Alyea, Division of Urology, Duke University, Durham, N. C.

An Evaluation of the End Results of the Medical and Surgical Treatment of Peptic Ulcer—Dr. Bruce Morton, Department of Surgery, University of Virginia.

Dr. Dewey L. Anderson, of Catawba Sanatorium, was elected to membership.

The next meeting of the Academy will be held at the Roanoke Hospital on April 3rd.

The Southside Virginia Medical Association

Held its regular quarterly meeting at the Central State Hospital, Petersburg, Va., on March 14th. There were about sixty doctors in attendance and an attractive program was presented. All papers were freely discussed. After the meeting, the visitors were served a delightful buffet dinner by Dr. H. C. Henry and his staff.

The next meeting will be held on Tuesday, June the 12th, at which time there will be a symposium on pyelitis.

Dr. D. C. Mayes, Church Road, is president, and Dr. R. L. Raiford, Franklin, secretary-treasurer.

Officers of Local Societies.

In addition to the list published in our March issue, the following are new officers for local societies of which no other report has been made:

ALLEGHANY-BATH COUNTY

President—Dr. G. S. Hartley, Clifton Forge.
Secretary—Dr. R. P. Hawkins, Jr., Clifton Forge.

WARWICK COUNTY

President—Dr. J. Warren Sayre, Newport News.
Secretary—Dr. E. D. Blechman, Newport News.

News Notes

Medical Society of Virginia—1933 Meeting.

The Council of the Society met on March 17th and at this time voted unanimously to accept the invitation from the Lynchburg Academy of Medicine, Inc., to hold its 1933 session in Lynchburg. The dates, selected subject to approval by the local organization, will be announced in the next issue of the MONTHLY.

With a view to facilitating the work of the House of Delegates and allowing more time for the delegates to attend the scientific sessions, it was voted to have the reports of the various committees published in the issue of the VIRGINIA MEDICAL MONTHLY appearing just prior to our annual meeting, that the delegates may have time to acquaint themselves with the work which has been accomplished and be prepared to discuss the reports when presented. It is believed that each report will receive a great deal more attention in this way and yet a great deal of time will be saved.

Other matters discussed were of a more or less routine nature. It is of especial interest to note that there was a hundred per cent attendance of councilors at this meeting, which is a rather unusual attendance record.

Books Available to Members of the Medical Society of Virginia.

As previously stated in these columns, all books in the Library of the Medical College of Virginia are available to members of the Society and may be borrowed at any time. The only cost is return postage. Below is given a list of some of the newer additions:

Aldrich, C. A.—Cultivating the Child's Appetite.
Appleton, J. L. T.—Laboratory Guide in Bacteriology.
Bensley—Anatomy of the Rabbit.
Brues, Chas. T.—Classification of Insects.
Castle, W. E.—Genetics and Eugenics.
Causey, David—Uninvited Guests.
Chase, Stuart—Men and Machines.
Coulter, J. S.—Physical Therapy.
Creed—Reflex Activity of the Spinal Cord.
Crowe, H. W.—Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases.
Daniel, Rob. P.—A Psychological Study of Delinquent and Non-Delinquent Negro Boys.
Denny-Brown—Reflex Activity of the Spinal Cord.
Durken, Bernhard—Experimental Analysis of Development.
Emerson, Haven—Alcohol and Man.
Gee, Wilson—Research Barriers in the South.
Gesell, Arnold—Infancy and Human Growth.
Gesell, Arnold—The Mental Growth of the Pre-School Child.
Ginn, J. A.—Pharmacology and Therapeutics.
Greenwood, Major—Epidemiology, Historical and Experimental.
Greisheimer, Esther M.—The New Physiology and Anatomy.

Haldane, J. B. S.—The Causes of Evolution.
Hamilton, G. V.—A Research in Marriage.
Harris, Henry—California's Medical Story.
Herrick—The Thinking Machine.
Herskovits, M. J.—The Anthropometry of the American Negro.
Hewlett, A. W.—Pathological Physiology of Internal Diseases.
Hogben, Lancelot—General Principles in Medicine and Social Science.
Holl—Sexual Life in the Child.
Horgan, Edmund—Reconstruction of the Biliary Tract.
Jackson and Salisbury—Outwitting our Nerves.
Jaeger, Edmund—A Dictionary of Greek and Latin Combining Forms.
Johannsen, Oskar—Medical Entomology.
Kruif, Paul de—Man Against Death.
Landman, J. H.—Human Sterilization.
League of Nations—League of Nations Yearbook.
Major, R. H.—Classic Descriptions of Disease.
Mazer and Goldstein—Clinical Endocrinology of the Female.
McDougal, J. B.—The Rabbit in Health and Disease.
Newsholme—International Studies on the Relation Between the Private and Official Practice of Medicine.
Newsholme—Medicine and the State.
Newsholme—The Story of Modern Preventive Medicine.
Park, Wm. H.—Public Health and Hygiene.
Patterson—American Educational Directory.
Pitkin, W. B.—A Short Introduction to the History of Human Stupidity.
Power, Sir D'Arcy—History of Pediatrics.
Reed, Louis S.—The Healing Cults.
Renshaw, Arnold—Laboratory Service and the General Practitioner.
Riley, Wm. A.—Medical Entomology.
Sanger, Marg.—The Practice of Contraception.
Sherman, H. C.—Chemistry of Food and Nutrition.
Sigerist, Henry—Man and Medicine.
Still, Geo. F.—History of Pediatrics.
Thompson, C. J. S.—Poison and Poisoners.
Twitmyer and Nathanson—Correction of Defective Speech.

Richmond Meeting, Southern Medical Association.

Dr. Fred M. Hodges, Richmond, has been appointed General Chairman for the Southern Medical Association meeting to be held in Richmond in November, the appointment having been recently announced by the President of the Richmond Academy of Medicine, Dr. Carrington Williams.

The American College of Physicians,

At its meeting in Montreal, Canada, in February, selected Chicago for its 1934 place of meeting, the exact dates to be named later. Dr. Geo. Morris Piersol, of Philadelphia, succeeded to the presidency and Dr. Jonathan C. Meakins, Montreal, was made president-elect. Dr. William Gerry Morgan, Washington, D. C., is secretary-general, and Mr. E. R. Loveland, Philadelphia, executive secretary.

Due to more stringest regulations governing the admission of physicians to fellowship in the College and the requirement that new members enter first as associates, the number of elections this year was very greatly reduced. The following Virginia physicians were elected to Associateship: Dr. Edward Lee Alexander, Newport News; Dr. Douglas Gordon Chapman, Richmond; Dr. William White Falkener, Newport News; Dr. Harold Walter Potter, Newport News; Dr. Landon Elwood Stubbs, Newport News. The total number elected to associateship was 112 while the total number elected to fellowship was only 24.

In view of the interest at this time in the report of the Committee on the Cost of Medical Care, we give herewith the report approved by the Board of Regents of the College at this meeting:

REPORT OF COMMITTEE ON PUBLIC RELATIONS
(Approved by the Board of Regents, American College of Physicians, February 7, 1933)

The final report of the Committee on the Costs of Medical Care is entitled: "Medical Care for the American People."

It is the twenty-eighth publication of a series representing an extensive and intensive effort to collect the factual data concerning numerous problems involved. These studies were made over a period of five years, after the expenditure of an extraordinary amount of thought, effort, and money.

The facts presented are of immense importance to the country as a whole and the medical profession in particular. They deserve the most careful study and consideration.

The detailed information is contained in the twenty-seven interim reports previously published, and only a brief summary is included in the final report. The main emphasis of the final report is placed upon certain definite recommendations proposed by the committee as the basis for a plan of reorganization of medical practice, so as to meet the social and economic defects of the existing system brought out by the factual data.

These recommendations are in the form of separate majority and minority reports, with a few members of the committee declining to assent to either report.

The widespread discussion which has followed the publication of the final report is centered upon the recommendations suggested. This is most unfortunate, as it has overshadowed the great value and significance of the studies upon which these recommendations are presumably based.

It is the opinion of your committee that the publication of definite recommendations was premature and unjustified by the facts presented. A careful analysis of the text of the reports shows that the recommendations are really only tentative suggestions for future consideration and careful experimentation, and in our opinion should have been offered as such.

It is also our belief that the actual factual data contained in the various reports are of such value that they deserve most careful study on the part of the medical profession. These facts reveal a situation which calls for consideration and action leading to modification of existing medical practice.

and in any such modification the medical profession should take a leading part.

It would be very unfortunate if prejudice caused by differences of opinion concerning the recommendations should belittle the value of the facts themselves. It would be still more unfortunate if either prejudice or inaction should deprive the medical profession of its rightful position of leadership in any program for remedying existing inequalities or injustices in the operation of the practice of preventive and curative medicine.

Our committee, therefore, recommends that the individual Fellows of the American College of Physicians be urged to study the facts presented in the report of the Committee on the Costs of Medical Care, uninfluenced by the acrimonious discussion which has been raised by the publication of the various recommendations, and we also recommend that the organized representatives of the medical profession in each community be urged to consider these problems in the light of their varying local needs and conditions, for it is our belief that by this method the enlightened leadership of the medical profession can point the way to improvements of great value, both to the public and to the medical profession itself.

Dr. Wright Clarkson,

Petersburg, Va., has given two lectures in the State within the last month on the prevention of cancer. One was on the night of Monday, February 20th, before the physicians of Harrisonburg, Va., and the surrounding territory and the nurses of the Rockingham Memorial Hospital, assembled for this purpose. The invitation was extended through Dr. Noland M. Canter, president of the local medical society.

On the night of Wednesday, March 8th, he gave a somewhat similar lecture before the citizens of King William County, the meeting being held in the Central High School at Enfield, by invitation of Dr. Hawes Campbell.

Married.

Dr. Earle Rawlings Ware, Fredericksburg, Va., and Miss Jane Tuggle Epes, Richmond, Va., March 11th.

Dr. Willie Kerns Dix, Richmond, Va., and Miss Avis Clifford Mathews, Atlanta, Ga., February 25th.

Dr. A. W. Terrell,

Lynchburg, Va., physician to Randolph Macon Woman's College since the beginning of that institution, was guest speaker at Founder's Day exercises in March. He told of the progress of the school since its beginning.

Stuart McGuire Lectureship, Medical College of Virginia.

The participants in the Stuart McGuire Lectureship series at the Medical College of Virginia, Richmond, April 25-27, 1933, will be Dr. Ronald T. Grant, Department of Clinical Research, University College Hospital Medical School, London, who will give three lectures on the Pathology of Endocarditis, and another lecture on the Arteriovenous Anastomoses in Human Skin; Dr. Louis Hamman, Johns Hopkins University, who will give a clinical-pathological conference; Dr. Tinsley Harrison, Vanderbilt University, who will lecture on cardiac dyspnea; and Dr. Paul White, Harvard University, who will give a clinic.

This program dealing primarily with the cardio-vascular system is open to the profession. Considerable attendance is expected from distant points.

News Notes from the Medical College of Virginia.

A portrait of Dr. Richard L. Bohannan, first professor of obstetrics and diseases of women and children, and one of the founders of the college, has been presented for the Founders' Room in the new library by the descendants of Doctor Bohannan. The portrait was done by John D. Slavin, a Richmond artist.

Mr. Harold Beamer, of Pulaski, Va., who graduated in pharmacy last year, was a recent visitor to the college.

Dr. H. B. Kellogg and Dr. Harold Jones, of Northwestern University and their instructive film on the anatomy of the pelvis were recently shown at the college. Dr. H. L. Osterud and Dr. H. H. Ware, Jr., requested this picture for the benefit of the medical students.

The number of patient visits for the outpatient department in February totalled 5,097, which is slightly larger than the number recorded for February, 1932. The number of male and female patients treated was about equal with a total of forty-four per cent colored and fifty-six per cent white.

Dr. W. T. Sanger, president, was the guest speaker at a meeting of the alumni in Roanoke the night of March 10th. Dr. Sanger discussed plans for the future development of the college and illustrated his talk by use of lantern slides. In December Dr. Sanger spoke to the Norfolk alumni and in April he will attend a meeting of the West Virginia alumni in Charleston.

XUM

The Board of Visitors of the College, at its mid-winter meeting, decided upon seven promotions in the senior faculty, as follows: Dr. Wyndham B. Blanton from associate professor to professor of history of medicine; Dr. W. R. Bond from associate professor of physiology and pharmacology to professor of physiology and associate professor of pharmacology; Dr. R. H. Courtney from assistant professor to associate professor of ophthalmology; Dr. Harvey B. Haag from associate professor of pharmacology and physiology to professor of pharmacology and associate professor of physiology; Dr. Daniel D. Talley from associate professor of roentgenology to professor of roentgenology, succeeding the late Dr. A. L. Gray; Dr. Harry Lyons from professor of peridontia and associate professor of oral pathology and therapeutics to professor of peridontia and oral pathology; and Miss Lulu K. Wolf from associate in nursing to assistant professor of nursing.

News Notes from Duke University School of Medicine and Duke Hospital.

During February and March the following visitors gave clinics at the Duke Hospital:

Dr. Addison G. Brenizer, of Charlotte, N. C. —February 21st—subject: Evolution of Thyroidectomy.

Dr. Hugh Trout, of the Jefferson Hospital, Roanoke, Va.—February 25th—subject: Surgical Treatment of Pulmonary Tuberculosis.

Dr. W. W. S. Butler, Jr., of the Jefferson Hospital, Roanoke, Va.—February 25th—subject: Transurethral Resection of Prostate.

Dr. Thomas M. Rivers, of The Hospital of The Rockefeller Institute for Medical Research, New York City—March 10th—subject: Filterable Viruses in Relation to the Practice of Medicine.

Dr. B. C. Willis, of the Boyce-Willis Clinic, Rocky Mount, N. C.—March 14th—subject: Perforated Wounds of the Abdomen.

The Clinch Valley Medical Society

Is to hold its regular semi-annual meeting on Saturday, April 22nd, at Norton, Va. An interesting program is to be presented as usual. Dr. G. B. Setzler, Pennington Gap, is president and Dr. C. B. Bowyer, Stonega, secretary-treasurer.

Veterans' Hospital at Roanoke.

The new general hospital of the Veterans' Administration at Roanoke, Va., plans for which are now in progress, will have a total capacity of 311 beds—for 205 white patients in the main building and 106 colored patients in colored patients' building. The site was donated by the city and consists of sixty acres, one and one-half miles west of Roanoke, between Old Bent Mountain Road and New Bent Mountain Road, overlooking the city.

The construction will consist of Main Building, Administration Building, Dining Hall and Kitchen with white attendants' quarters over, Nurses' Quarters, Manager's House, four Officers' Quarters and Service Building, namely: laundry and shops, storehouse, garage with colored attendants' quarters over, and boiler house. The style of the buildings will simulate those at Williamsburg, Va., with certain modifications.

The main building, with Administration Building on one side and Recreation Building on the other, will form a court in shape of a horseshoe, which is approached from either the Old Bent Mountain Road or the New Bent Mountain Road. There will be a two story corridor connecting these three buildings. The Dining Hall is just to the rear of the main building and connected to same by a two story corridor.

The colored patients' building is located to the south of the Dining Hall and connected to same by a corridor. This building faces on road which runs from main entrance of hospital past the main building and recreation building. The road after passing the colored patients' building runs almost parallel to the Old Bent Mountain Road and here are located the Nurses' Quarters, Manager's House and four Officers' Quarters on the high point of the site.

Faculty and Staff Meeting, Medical College of Virginia.

Dr. I. A. Bigger, chairman, announces that the regular scientific monthly meeting of the Faculty and Staff of the Medical College of Virginia will be held on Thursday, April 6, 1933, at 8:15 P. M., in the auditorium of Cabaniss Hall. The program will be as follows:

1. "Unusual Callus Formation in a Fracture of the Lower Leg. A Case Report"—Dr. Randolph L. Anderson.
2. "Abdominal Pregnancy and the Excretion of Placental Hormones Following Delivery"—Dr. H. Hudnall Ware and Dr. Rolland J. Main.

Dr. William H. Turner, Jr.,

Of the class of '18, University of Virginia, Department of Medicine, has located in Gordonsville, Va., where he is engaged in general practice. Dr. Turner was in China about seven and a half years under the Northern Presbyterian Mission Board. He was located for varying periods of time in Peking, Nanking and Nanhsuchow, doing general hospital and out-patient work.

Dr. J. Shelton Horsley,

Richmond, Va., was invited to give the Porter Lectures at the University of Kansas this year. The lectures were on March 28th and 29th, two of the lectures being to the Medical Department of the University in Kansas City and the third lecture at the University of Kansas at Lawrence, Kans.

The Porter lectureship was established only a few years ago, and the two previous lecturers have been Dr. Joseph Collins, of New York, and Dr. Lewellys F. Barker, of Baltimore.

Dr. Horsley will also give an address before the Buffalo Academy of Medicine at Buffalo, N. Y., on Wednesday, April 5th.

Dr. John W. Robertson,

Onancock, Va., recently sustained a very painful accident while en route to Pocomoke City, Md., to attend an intercity Rotary meeting. The front tire blew out, the car became unmanageable and turned over in a ditch. Dr. Robertson, being on the rear seat, suffered the worst injuries—numerous cuts about the head and face and a rather painful injury to his left hip. Although laid up for several weeks, he has now completely recovered and is in active work again.

Bulletin to be Published by Richmond Academy of Medicine.

The Richmond Academy of Medicine, Richmond, Va., beginning March, is to publish a quarterly bulletin. It is to contain abstracts of papers presented at meetnigs, notices, and other items of interest to the profession.

Copies of the Bulletin will be mailed to physicians in Virginia and adjoining states.

Dr. James Wilbert Love,

Of the class of '28, Medical College of Virginia, has located in Alexandria, Va., with offices at 108 N. Washington Street, where he is engaged in general practice. Following graduation, Dr. Love interned in the Hospital Division of the Medical College of Virginia. After two years here, he went to Cleveland, Ohio, where he had secured a fellowship in medicine at the Crile Clinic. He was licensed by the National Board of Medical Examiners in 1929.

The Mid-Tidewater Medical Society

Will hold its regular quarterly meeting in Saluda, Va., Tuesday, April 25th, at 11:00 A. M. The usual interesting program is being arranged. Dr. Blair Spencer, Zanoni, is president, and Dr. M. H. Harris, West Point, secretary.

Dr. Garcin Honored.

Dr. Ramon D. Garcin, Richmond, Va., was recently presented with an automobile by the Grand Lodge of Virginia Masons, in appreciation of his thirty-three years' service as physician at the Virginia Maconic Home for children of Masons. Dr. Garcin has served this institution for a third of a century entirely without remuneration and during this period has lost only two cases at the Home.

American Association for the Study of Goiter.

The annual meeting of this Association is to be held in Memphis, Tenn., May 15th, 16th and 17th, with headquarters at Peabody Hotel. An elaborate program has been arranged. Each day from 8:00 to 10:00 A. M. will be given over to hospital clinics, and from 10:00 to 12:00 M., there will be diagnostic clinics and discussions. Papers will be presented at the afternoon sessions and on the first evening there will be addresses by the president and two other speakers. On the second day, there will be a garden party in the afternoon and a banquet in the evening. In all, the program will be interesting and attractive. Dr. Henry S. Plummer, Rochester, Minn., is president.

Members of the profession in good standing are cordially invited to attend this meeting and are also urged to join a special group sailing from New York City, July 26th, to attend the International Goiter Conference, to be held in Berne, Switzerland, August 10th, 11th and 12th. Special rates have been provided and daily programs arranged while en route to le Havre. Those interested should communicate promptly with Dr. J. R. Yung, corresponding secretary, Terre Haute, Ind., or Dr. Martin B. Tinker, Savings Bank Building, Ithaca, N. Y., Geographic Delegate for the states of Mary-

land, Delaware, New York, Pennsylvania and Virginia.

Transferred to Hawaii.

Captain Claude L. Neale, recently stationed at Fort Monroe, Va., and Captain Clyde L. Brothers, at Alcatraz, Calif., both of the class of '28, Medical College of Virginia, have been transferred to the Hawaiian Islands and sailed recently to take up their duties there.

American Medical Association.

At this time of the year, thoughts always turn to the annual meeting of the American Medical Association. This year, Milwaukee is to be host to Association and an excellent meeting is expected. All fellows who expect to attend are urged to make reservations as soon as possible.

As Chicago's World Fair is being held this year, this will be an excellent opportunity to "kill two birds with one stone." In addition to World's Fair Tours, other attractive trips can be planned to make attendance on the Milwaukee meeting especially worth while.

Economic Loss Due to Mental Disease.

According to a statement made by the New York State Department of Health, the cost of mental disease has recently risen to great significance. During the past ten years, about $92,000,000 has been spent by that State for the construction of hospitals for patients with mental disease. In 1932, over $20,000,000 was expended for the maintenance of such patients in the hospitals of the New York State Department of Mental Hygiene. At present, there are over 56,000 patients in its State hospitals and the number is increasing at the rate of 250 a month. At current rates, the annual cost of hospital care and treatment for these patients, including housing and general administration, amounts to about $2 per day or over $700 per year.

Dr. James B. Woods, Jr.,

Of Chinkiang, China, a recent visitor in Richmond, Va., has sailed for England where he will pursue a special course of study at the University of London. Dr. Woods is an alumnus of the Medical College of Virginia, in the class of '22.

How Do You Do?

The following appeared recently in a news release sent out by the Woman's Auxiliary to the American Medical Association:

"Some pay their dues when due,
Some when overdue,
Some never do.
How do you do?"

As we need cooperation, we will appreciate it if our members will send us an early answer to the verses.

The Graduate Nurses' Association of Virginia,

At a meeting of its board of directors recently, selected Richmond as its 1933 place of meeting, because of its central location. The sessions will be held on May 17th-20th, under the presidency of Miss Blanche Webb, director of the King's Daughters' nursing service of Norfolk.

Virginia Tuberculosis Association.

In addition to the splendid human record of service rendered by this Association during the past year, the financial statement as reported at the recent annual meeting in Richmond showed that the Association not only lived within its receipts but ended the year with a surplus of $931.00.

The total seal sale from the 17 Virginia cities and the 100 counties amounted to $75,716.72. After disbursements to the National Tuberculosis Association and the various local associations, there was a balance for the State Association of $17,866. Other income from memberships, donations and interest brought the total income to $18,353. The items of expense are covered under the following four general heads: health education, administration, seal sale, and organization in the field service. The splendid unselfish work of volunteers throughout Virginia supplemented greatly the work accomplished on a financial basis.

Officers elected at the annual meeting are: President, H. Laurie Smith, Ashland; vice-presidents, Dr. Kenneth F. Maxcy, University, and Mrs. H. D. Howe, Hampton; treasurer, George W. Call, Richmond; and secretary, Dr. Roy K. Flannagan, Richmond.

Dr. U. W. Massie,

Formerly of Fincastle, Va., has located for practice at Longacre, W. Va. Dr. Massie is a member of the class of '30, Medical College of Virginia.

Mother's Day.

The Maternity Center Association, 1 East 57th Street, New York, N. Y., has completed plans for the third annual Mother's Day Campaign, the object of which is to save the lives of women who now die needlessly from maternity causes. Last year, many medical societies, boards of health, women's clubs and civic organizations joined in the campaign to teach the public the vital importance of adequate maternity care. This year, it is hoped many similar meetings will be held by interested organizations throughout the country, during the week preceding Mother's Day—May 14th.

Material for programs is available, free of charge, on application to the above address. This includes outlines for meetings, material for radio talks, articles for newspaper use and editorial comment.

Dr. E. G. Gill,

Roanoke, Va., has been appointed a member of the board of visitors for the Virginia School for the Deaf and Blind at Staunton, Va. The appointment, made by Governor Pollard in February, is to fill the unexpired term of the late J. H. Lindsay to July 1, 1936.

Dr. George W. Parrott,

Recently of Charlottesville, Va., has located at New Market, Va., and is engaged in general practice there.

Dr. Joseph L. Alexander,

Staunton, Va., was recently elected color sergeant of the Stonewall Jackson Camp, Sons of Confederate Veterans, at its meeting in that city.

Loses Home by Fire.

Dr. John A. Owen had the misfortune to lose by fire his handsome ancestral home situated about six miles from South Boston, Va., on March 18th. As the fire was discovered early in the morning, it was impossible to secure aid in time to save but very little of the antique furniture.

An International Congress for the Protection of Infancy

Is to be held in Paris from the 4th to the 9th of July, 1933. The Congress is to be arranged in eight sections: maternity, first childhood, second childhood (children from 3 to 14 years); adolescence; abnormal childhood; social service; juridicial section; sundry papers. The organizers have obtained important reductions in fares on all French railways and hope to secure the same facilities from foreign railways. For further information, write the Secretary of the Congress, 26, Boulevard de Vaugirard, Paris XV, France.

Office Space for Rent—

Available small space in Medical Arts Bldg., Suite 409, Richmond, Va., for a doctor desiring a consulting room with waiting room and a person to take or deliver messages. Reasonable rate. Phone 2-8440. (*Adv.*)

For Sale.

Eye, ear, nose and throat instruments, Mays operating chair, wall chart for examining eyes, dental instruments, etc. Prices greatly reduced. Write Mrs. M. R. Irby, 200 West Grace Street, Richmond, Va., or phone 3-6533. (*Adv.*)

Obituary Record

Dr. Adam Tyree Finch,

Well-known physician of Chase City, Va., died February 22nd, after having been in ill health for several months. He was 60 years of age and a graduate of the University of Virginia, Department of Medicine, in 1896. Dr. Finch was former commander of the Virginia Department of the American Legion and also colonel in the Medical Corps Reserve, U. S. A. Dr. Finch organized and managed for more than ten years the Chase City Hospital, and served as president of the county board of education. He had been a member of the Medical Society of Virginia for thirty-five years, during which time he was an active worker and always took great interest in the affairs of the Society. He had been secretary of the Mecklenburg County Medical Society for a number of years. Dr. Finch is survived by his wife and five children.

Dr. William A. Vaughan,

A prominent physician of the Valley of Virginia, and for forty-five years a practicing physician at Timberville, Va., died at his home in that place on March 1st, after a short illness. He was seventy-four years of age and this illness which terminated fatally was the first of his life time. Dr. Vaughan was a native of Rockingham County, Va., and graduated from Jefferson Medical College, Phil-

adelphia, in 1884. He had been a member of the Medical Society of Virginia since 1885. At the time of his death, he was president of the Rockingham County Board of Health.

Dr. George Wythe Tompkins,

Coeburn, Va., died February 27th, at the age of sixty years. He was a graduate of the former University College of Medicine, Richmond, Va., in 1896. Dr. Tompkins was a charter member of the Wise County Medical Society, had been a member of the Medical Society of Virginia since 1897, and was also a fellow of the American Medical Association.

The Wise County Medical Society at a meeting following Dr. Tompkins' death, passed the following resolutions:

WHEREAS, Dr. George Wythe Tompkins was, on February 27, 1933, removed from our midst by death, and

WHEREAS, he had been a distinguished member of our profession and a charter member of this Society, be it

RESOLVED, That in his passing the medical profession suffered a grievous loss, the community in which he lived and the people whom he served a wise counselor, sympathetic friend and a faithful attendant;

That our sympathy be extended to his family and clientele;

That a copy of this be recorded in the minutes of the Wise County Medical Society, a copy sent the family, and a copy to the VIRGINIA MEDICAL MONTHLY.

J. B. WOLFE,
J. H. HAGY,
W. R. CULBERTSON,
Committee.

Dr. James McTeer Miller,

Wytheville, Va., a prominent physician of Southwestern Virginia, died suddenly on March 12th, death being due to myocardial failure. He was a native of Grayson County, Va., and sixty-three years of age. He graduated from the former College of Physicians and Surgeons, Baltimore, in 1896, and joined the Medical Society of Virginia several years later. He was a former president of and active worker in the Southwestern Virginia Medical Society and was interested in many civic enterprises.

Dr. Martin D. Delaney,

Alexandria, Va., died February 10th. He was 58 years of age and a graduate in medicine from the Georgetown University, Washington, D. C., in 1898. Dr. Delaney had been a member of the Medical Society of Virginia since 1900 and was an associate member of the Medical Society of the District of Columbia.

Dr. Clarence Albert Shore,

Raleigh, N. C., recent president of the Tri-State Medical Association of the Carolinas and Virginia, died February 10th, just prior to the annual meeting of that association. He was fifty-nine years of age and was a graduate in medicine from Johns Hopkins University School of Medicine in 1908. He had been director of the North Carolina State Laboratory of Hygiene for a number of years and was a former president of the North Carolina State Board of Medical Examiners.

Dr. David Thomas Tayloe,

Director of the Washington Hospital, Washington, N. C., died on January 10th, at the age of 68. He was graduated in medicine from Bellevue Hospital Medical College of New York in 1885, was an active member of the Medical Society of the State of North Carolina, and a fellow of the American College of Surgeons.

Dr. Freeman Valentine Walker,

Captain, U. S. Army, retired, died at his home, Bluffton, S. C., on January 21st, death being due to angina pectoris. He was 72 years of age. Dr. Walker was a graduate of the University of Virginia, Department of Medicine, in 1881 and entered the Army as an assistant surgeon in 1886. He was retired in 1906.

Dr. Joseph Dixon,

Greenville, N. C., died January 21st, after an illness of sometime. He was 68 years of age, and studied medicine in Richmond, graduating from the Medical College of Virginia in 1894.

Dr. Alfred S. Burdick,

President of the Abbott Laboratories of North Chicago, Ill., died February the 11th, at the age of 66 years. Death was due to pneumonia. Dr. Burdick became president of the Abbott Laboratories in 1921 and many improvements in this Company in the last twelve years are a tribute to his genius and wisdom.

Dr. Thomas Vaden Brooke

Died at his home in Sutherlin, Va., March 12th, at the age of 85. He was a graduate of the Medical College of Virginia in 1872. Dr. Brooke was a Confederate veteran and had practiced medicine in Pittsylvania County for forty-five years.